with My report on the occasion a good one giving the facts of the case at that time

APPENDIX No. 167.

Office of the Mayor of the
City of Philadelphia, *August* 22, 1871.

To the Common Council of the City of Philadelphia:

Gentlemen:—I return without my approval the bill entitled "An Ordinance to make an appropriation to the Department for Supplying the City with Water, for the purpose of extending the Water Works," and respectfully request you to reconsider its provisions.

It is only after careful reflection and with very great regret that I have felt constrained to do so, for I have a warm sympathy with the purpose of this bill, and a hearty desire to co-operate in all proper measures for the extension and improvement of our water supply. A radical defect in the bill is, that it appropriates very large amounts in gross sums, without really and practically itemizing the appropriations or defining the mode of their expenditure, thus disregarding the plain requirements of the Act of Assembly of May 13th, 1856, and opening the door for expenditures, which cannot be watched and checked, and controlled with due care by the proper accounting officers of the City.

Thus, Item 7 appropriates in one gross sum $1,325,000 for the construction of a "*large storage reservoir, East Fairmount Park.*" Not one word of detail, or of restriction accompanies this very large appropriation. The very site is undeterminate, for the East Park extends from Upper Chesnut Hill to Fairmount. The size is as undefined as the location; it may have the capacity of one million, or of six hundred millions of gallons. The material is equally uncertain; it may be of cut stone or it may have earthen walls. Its form and its dimensions are as undefined as its site or its capacity, or the material of which it is to be constructed.

These criticisms have an added force, if it be true, as I have been told it is, that no detailed plans or drawings, nor

Frederick Graff Jr. Scrapbook 2, 1858-1871
Philadelphia Water Department Historical Collection
See Graff Scrapbook 1 for earlier volume of newspaper and magazine clippings. Index after page 40 (or numbered page160).

any estimates, such as are usual and customary before embarking in great enterprises, have ever been submitted to Councils in reference to this reservoir.

I have examined the journals of Counclis seeking, such information for my own guidance, but have failed to find any light on these points, and thus am compelled to believe that nothing of record exists upon your journals to support or explain in detail this large item of expenditure.

Judged then, simply by the record, this item is an appropriation of $1,325,000 to the Chief Engineer, to be used without stint or limit in the construction of a storage reservoir on any site in the East Park, within the space of about ten miles, which he may elect. And the size, form, capacity and material of the construction, and the period within which to finish it, so far as the record shows, as to action of Councils, is left to an equally vague and unlimited discretion.

I have a high respect for the integrity and the ability of the Chief Engineer of the Water Works; but, as a matter of principle, I cannot consent to clothe any executive officer with a power so vast and so vague as this. Your record should define clearly and distinctly the duty he is to discharge, for the whole legislative power of the City is in your hands. He, as your executive officer, should have no powers except those which you have clearly defined, and should spend no money, except for a purpose, and in a manner which you have distinctly authorized.

Moreover, I desire, with great respect, to invite you to consider whether a work like this cannot be constructed with far greater economy through the agency of a contractor, employed under the restrictions of a well-drawn contract, and acting under the supervision and control of the present Chief Engineer, or of some equally competent hydraulic engineer appointed under him.

As a general rule, our vast works of internal improvements are constructed in this manner. Bridges of marvellous length and strength, involving the nicest practical skill, and the highest principles of mathematical science are thus built. Within a few days, a steamship company in our midst has placed under one contract every detail of construction and material which attends the building, complete

for service, of four noble steamships, costing over two millions of dollars.

The experience of each member of your body will supply numberless illustrations of the facts stated. Why, then, can we not secure for the City of Philadelphia the economy and the efficiency which a proper contract for the doing of this work would procure for her?

If individuals and improvement companies have found the contract system wise and economical and efficient, it must be so in a higher degree with municipal corporations; the uncertain tenure of office by heads of departments; the necessity they are under of employing inefficient or incompetent, or slothful hands to oblige those who have political or personal claims upon them; the tendency which always exists to render works which employ large numbers of men, subservient to political purposes, these and many other considerations, which will readily occur to your minds, affect very seriously both the economy and the efficiency of all large works, which are directly undertaken by municipal corporations.

It is, therefore, it seems to me, worthy of your grave consideration, whether much of the work contemplated by this Ordinance would not be far better done by advertising for proposals, and executing them under a contract with some competent party acting under the careful supervision of a well-selected engineer.

I might multiply reasons for disapproving of this Ordinance, but I respectfully submit these to your consideration and judgment, remarking that I will heartily concur in any well-considered measures for the improvement of our water supply.

Very Respectfully,
DANIEL M. FOX,
Mayor of Philadelphia.

APPENDIX No. 168.

August 22, 1871.

To the Presidents and Members of the Select and
Common Councils of the City of Philadelphia:

Gentlemen:—Learning that Councils have been called together to-day to receive a communication from the Mayor of the City, with some objections to at least one of the items of the appropriation bill recently passed by your honorable body, I ask leave to present to your notice a few of the facts which have induced me to propose the expenditure of an amount of money which may at first glance appear large, but which when the importance and necessity for such expenditure, and its trifling cost per capita of our population is considered, will be admitted as comparatively a small item.

The amount referred to is for the construction of a reservoir, upon an exceedingly desirable position in the East Park, which will be capable of storing a sufficient quantity of water to secure the City from disaster and inconvenience caused by drought, inadequate machinery, or accident thereto.

In 1854, just after the consolidation, when I had the honor to be the Chief Engineer of the Works, I called the attention of Councils to this serious want in the water system of the City; since that time Messrs. Ogden, Cassin, and Birkinbine, have each warned the City of the difficulties it is subjected to in consequence of inadequate storage.

In several of my reports made since my return to the charge of the Works in 1867, I have urged upon you this great necessity, a necessity which of course becomes more and more apparent every year, every day, every hour, as the immensely increased demand for water takes place.

The total capacity of the reservoirs now in use in that portion of the City which the new reservoir is intended to relieve, is 83,392,636 gallons *when full*, whilst the actual quantity of water delivered to the same district in July of

last year is 49,914,229 gallons per day. It will therefore be seen that the entire capacity of the reservoirs, *when full*, is only equal to one and five-eighths of a day's demand.

An amount of storage so trifling, that the water delivered to our citizens can scarcely be said to do more than pass through the reservoirs, just as though they were merely enlarged mains.

The disadvantage, the danger of this must be apparent to the most careless observer; a freshet in the Schuylkill, or low water upon the dam, which prevents the working of the machinery for a single day, and the water in the reservoirs is reduced so low, that weeks are required to refill them to their proper level, even if no large fire, or extraordinary demand, occur during the interval.

The following statement of the condition of the reservoirs on Saturday last may be taken as an illustration of the condition the Works are in, in this particular:

The water in Fairmount reservoir stood 5 feet 4 inches deep, instead of 12 feet.

The water in Corinthian avenue reservoir stood 15 feet deep, instead of 26 feet.

The water in Delaware reservoir stood 3 feet 1 inch deep, instead of 12 feet.

The water in Schuylkill reservoir stood 14 feet 8 inches deep, instead of 16 feet.

And this with all the power now in our possession fully employed.

In addition I quote from a letter just received from the Chief Engineer of the Schuylkill Canal, dated Reading, August 18th, 1871, as follows:

"The water in the river, here and above, is, at this time, as low as it was at any period during the protracted drought of 1869."

Some objection has been made to my estimate for the construction of the large reservoir, and it has been asserted that the work can be done for a much less sum.

I have only to say, that my estimate has not been made upon mere assumption of probable cost, without experience of the manner of doing such work, and the extraordinary precautions necessary to be taken to ensure its permanance and safety, but has been based upon careful review, of the actual cost of doing exactly similar work, at Corinthian avenue, Belmont, and Delaware reservoirs, as well as the cost to other cities who have recently built large reservoirs.

A reservoir embankment cannot be constructed in the manner of a railroad, by careless contractors, of materials indiscriminately taken from a cutting, and placed upon a bank by a temporary railroad, but must be composed of carefully selected material, thoroughly consolidated, puddled, and lined.

It must be remembered that a very slight failure in a reservoir containing 750,000 gallons of water, might result in incalculable loss of property, and probable destruction of of human life.

The city of Boston, where public work is carried on in an intelligent and economical manner, has just completed the so-called "Chestnut Hill" reservoir at a cost of $2,500,000, to contain 730,000,000 gallons. Our estimate for a reservoir to contain 750,000,000 gallons, is but $1,325,000, and therefore in comparison with that of Boston, must be considered as exceedingly low.

The estimate has been itemized in the manner usual in this and other departments of the City, and has had the approval of both the Committees on Water and Finance.

On the 30th of November, 1869, nearly twenty-two months since, I asked for the amount necessary to do this and other important work; it has not yet been put at the disposal of the department; the best part of the season has been lost to us, as such work cannot be done to advantage after the 1st of December.

I feel that I would be open to the charge of criminal negligence, had I not called your attention to the frightfully dangerous position the City is placed in on account of the want of proper storage, as often, and as forcibly as I knew how.

Having done this, on many occasions, it is for those higher in authority to incur the risk of delaying, or leaving this all important work undone.

Very Respectfully,

FRED. GRAFF,

Chief Engineer Water Department.

125

February 20. 1829

NEW ARRANGEMENT.

NEW YORK UNION LINE—By Stages and Steamboat.

At 4 A.M. and 12 o'clock, noon.

TWO Stages leave Philadelphia for New York every day, Sundays excepted, at 4 o'clock, via Trenton and Amboy; 30 miles by steamboat. Passengers arrive at 4 o'clock the same afternoon, by a LOW pressure steamboat, not a high pressure. Fare 5 dollars.

One Stage leaves Philadelphia for New York every day, Saturdays excepted, at 12 o'clock, noon, via Trenton, Princeton, New Brunswick; lodge at Kingston, and arrive at New Brunswick at 11 o'clock next morning; passengers there take a low pressure steamboat, and arrive at New York at 4 o'clock the same afternoon. Fare 4 dollars.

For seats apply at the Union Line Office, No. 30 south Third street, opposite Congress Hall, or at the U. S. Mail Office, No 28 south Third street.

N.B. The Union Line Stage for BALTIMORE, leaves No. 30 south Third street, every morning at 4 o'clock, and arrives at Baltimore the same day.

TRENTON Coach leaves the same office every morning at 9 o'clock. Fare $1.

All Baggage at the risk of the owner.

J. VANDEGRIFT,
jan 29— Agent.

WINTER ARRANGEMENT.

CITIZENS' COACHES & STEAMBOAT LINE FOR NEW YORK.

Through in one day, via Bristol, Trenton, Princeton, Kingston and New Brunswick.

THE Citizens' Line of Coaches will leave the Offices, No 32, North Third street, opposite Hieskel's City Hotel, and 23, South Third street, sign of Robinson Crusoe, every morning 4 o'clock, and arrive in New York early the same afternoon, by the steamboat Saratoga, from New Brunswick. Fare through $5.

TWO O'CLOCK LINE,

Leaves the same offices every day (Saturdays excepted) at 2 o'clock, P.M., lodge at Trenton, and arrive in New York the following afternoon, by the steamboat. Fare through $4. For seats apply at the offices, No. 23, South Third street, and No. 32 North Third street. jan 24—d

CITIZENS' LINE

FOR NEW YORK.

THE Steamboat PENNSYLVANIA leaves Arch street wharf every day at 12 o'clock, M., for Bristol; passengers from thence take coaches, lodge in Trenton, and arrive in New York early next day, by the steamboat Saratoga, from New Brunswick. Fare through $4.

SECOND LINE

Leaves the Offices, No. 32 North Third street, and No. 23 South Third street, every morning, at 4 o'clock, A.M., by coaches, and arrive in New York early the same afternoon, by steamboat, from New Brunswick. Fare $5.

Seats taken at either of the above named Offices, and at the Steamboat Office, No. 8 Arch street.

All Baggage at the risk of the owners thereof.

Dinner provided on board. jan 27—d

U. S. MAIL COACH GOOD INTENT.

Through to Pittsburgh in 3½ days.

Leaves the office, No 284, Market above Eighth street, daily, at 6 o'clock, A. M. via Lancaster, Harrisburg, Carlisle, Chambersburg, Bedford, Greensburg, to Pittsburgh. Also an accommodation Coach leaves the above office daily, for Harrisburgh, at 4 o'clock, A. M. Both the above lines run through to Harrisburg the same day. The above lines have the advantage of being connected at Harrisburg, with the lines to Sunbury, Northumberland, Lewistown, Huntington, Bellefont, Phillipsburg, Franklin, Meadville and Erie, at Pittsburgh with the line by Beaver, daily to Cleaveland on Lake Erie, with the daily line to Wheeling, and with the daily line by Butler, Mercer, Meadville, and Waterford to Erie, on all of which connecting lines passengers will be sure of seats and to be taken on without delay.

COACH FOR BALTIMORE,

By the Turnpike road, via Lancaster, Columbia and York, every morning except Sunday, at 6 o'clock, A. M. lodge at York, and arrive at Baltimore the following day. This line has the advantage over all other lines leaving the city, as it crosses the bridge at Columbia and is not detained by obstruction of the ice, &c. on the Susquehanna.

Fare through $10.

For seats apply (for Baltimore) at the Lancaster and Pittsburgh Mail Coach Office, No. 284 Market st. U. S. Mail Coach Office, No. 23, south 3d. st. and at Mr. Inslee's National Hotel, in Chestnut between Third and Fourth streets.

jan 16—dtf WM. JORDAN, Agent.

THE EIGHTEENTH CONCERT
OF THE
MUSICAL FUND SOCIETY
OF PHILADELPHIA,

WILL take place at their Hall, on FRIDAY, the 20th of February, 1829; on which occasion will be performed,

THE MESSIAH,
COMPOSED BY G. F. HANDEL.

Notwithstanding the high,—the almost sacred character, that successive ages have bestowed upon this the greatest work of one of the greatest masters, yet it has been regretted, by good judges & sincere lovers of Music, that its length should perhaps, sometimes, operate in preventing its full effect being felt by a general audience. In compliance with these sentiments, and under the sanction of similar arrangements in Europe, the Board of Directors have determined on this occasion, to give only the most impressive parts of this sublime Oratorio,—but they will have the pleasure of adding two of *Handel's* finest Overtures—one which will preface each part, that of SAUL the first, and ESTHER the second.

A Pamphlet published by the Society, contains the words of each piece in full, accompanied by critical and explanatory notes, and where it will be perceived that the Scriptural connection of this great subject will remain unbroken.

CONDUCTORS.

VOCAL.	INSTRUMENTAL.
Messrs. Carr,	Messrs. Hupfeld,
Cross,	Homman,
Loud.	Schetky.

Leader of the Band—Mr. C. F. Hupfeld.

Principal Vocal Performers.

Miss George,	Mr. Boyle,
Master Mercer,	Mr. Cross.

To commence at 7 o'clock, precisely.

The General Rehearsal will be held on Thursday, the 19th, at 2 o'clock, P. M., to which members will be admitted by exhibiting their Tickets at the door.

The committee for the distribution of ladies and members' tickets, will attend at the Hall on Thursday, from 10 till 2 o'clock, and on the day of performance from 10 till 5 o'clock.

Books of the words of the Oratorio, with critical and explanatory notes, and Tickets, will be for sale at the principal Music and Book stores.

Carriages will set down heads east, and take up heads west. feb 14—d20F

CITY ORDINANCES. 3

PREAMBLE AND RESOLUTION REquesting the Legislature to pass an act for the better preservation of the Schuylkill water:

Whereas, An act entitled "A further supplement to an act to protect the property of the Mayor, Aldermen and citizens of Philadelphia, at Fairmount, and to preserve the purity of the Schuylkill water," passed the seventh day of February, 1832, which act received the sanction and approval of Councils on the twenty-first day of March, 1857, (appendix S. C., No. 108,) has again been presented to the Legislature, and is now under consideration by that body;

And whereas, The city is expending very large sums of money in erecting works to take a supply of water from a portion of the Schuylkill now entirely unprotected by any law for maintaining and preserving its purity, it is of the utmost importance to the health, prosperity and comfort of our citizens that the corporation should have the power to restrain all persons from polluting the stream from which the water-supply of the said city is obtained; therefore,

Resolved, by the Select and Common Councils of the City of Philadelphia, That the Legislature of the commonwealth of Pennsylvania be and they are hereby earnestly requested to pass without delay an act entitled "A further supplement to an act to protect the property of the Mayor, Aldermen and citizens of Philadelphia, at Fairmount, and to preserve the purity of the Schuylkill water," passed the seventh day of February, 1832.

JOSEPH F. MARCER,
President of Common Council.

Attest—JOHN ECKSTEIN,
Clerk of Common Council.

WM. S. STOKLEY,
President of Select Council.

Approved this eleventh day of April, Anno Domini one thousand eight hundred and sixty-eight, (A. D. 1868.)

MORTON McMICHAEL,
1t Mayor of Philadelphia.

UNWHOLESOME WATER.—An epidemic is said to be raging at the present time in the village of Terling, in Essex, England, caused by the use of well water poisoned by sewerage. At the latest accounts, out of a population of nine hundred, one hundred and eighty persons had been taken ill, and twenty are said to have died. This should be a warning against allowing drains to pass near wells or springs, or permitting sewerage to escape into water used for drinking purposes, even at what is usually considered a safe distance. Water thus contaminated does not always exhibit any evidence of its impurity; a convenient test, however, is furnished, according to a recent writer, by half filling a bottle with the water, covering with the hand, and, after shaking violently for a while, quietly applying the nose. Should no smell be perceived, cork the bottle and put it away for a few days, and then renew the experiment, when the bad odor will be at once perceived, if impurities of the kind referred to be present in injurious quantity.

THE WANT OF WATER.—The public have been complaining of the lack of water sufficient for domestic purposes during this summer, and from present indications their wants in this respect are not likely to be very soon relieved. Either through inattention of those who have had the charge of the Water works, or an unwise economy in Councils, in withholding the necessary means for repairs, the works have got out of order, and are not capable of performing the duty required of them. One basin, that in Spring Garden, is in such a leaky condition, that it will not hold more than two-thirds its actual capacity; beyond that it is useless to pump water into it, for it runs out as fast as it is pumped in. The engines at the works are not in proper order. Some pumps have been bursted, and patched up with iron bands. Such a condition of the public Water-works must have arisen from long continued neglect, and proves that they have not been in very competent hands. The superintendent, of course, is not required to furnish the money to keep the works in repair; but a man thoroughly fitted for the position, would have so pressed the matter upon Councils, that they would have been compelled to take the required action to remedy the evil, however dilatory such bodies may be generally, and however indisposed to expend money for useful purposes. The public have been complaining for the last year or two of a deficiency of water. If the superintendent had explained to the citizens what was the real cause of that deficiency, they would have taken measures to bring Councils to a proper consideration of it, and the inconveniencies by this time would have been remedied. But this was not done. Instead of telling the people the real cause of the deficiency, and having it instantly removed, they have been exhorted not to waste the water, and the aid of the police has been invoked to prevent housekeepers from using what their daily wants require. We hope, now that the superintendancy has gone into other hands, that we may have some relief. The subject should be brought at once to the notice of Councils, and a full statement made of what the works require to furnish a full supply of water at all seasons. Let such a statement be made, and we have no fear that Councils will not supply the means required. Delay in a work of this necessary character, is a wrong to the public and an injury to the city.

[For the Public Ledger.]

The Works at Fairmount—How to Get a Sufficient Supply of Water.

In my last communication, I pointed out some of the objections and made the assertion that the pumps at Fairmount could have been improved so as to put more water in the basin with the same amount of power, and as many may think that it is easier to condemn than to give the modus operandi of a better plan, I will give as much explanation to the general reader as it is possible without the aid of drawings—before doing so I will correct two typographical errors in my last; for "descending main," read *ascending* main—"and speed of run," read speed of rim.

The comparison of my arrangement is to be understood to refer to the *best* pump now at Fairmount, and not to the worst.

1st. Longer stroke; this involves a greater speed of piston. This may startle some who pin their faith on formulas of books founded on imperfect working pumps; nor could those now at Fairmount be worked at the speed of my plan of pump without a great increase of wear and tear.

Those whose experience has been *practical*, will admit that the longer the stroke the more effective the pump, the bore being less, the valves are less, and there is a smaller per centage of loss. Again, a pump of long stroke can be worked with *less* power, and the water is kept at a more regular velocity in the discharge pipes. For example—take the six feet stroke, as it is now at Fairmount, and make another pump of *large diameter*, so as to have the same capacity of chamber to suit a *one foot stroke*, (or less,) and how much water would be put in the basin? Let the piston travel at the same speed as the six feet stroke, and it would not be long before the *shocks* would destroy all.

2. In my improvement, the valves will open and shut quicker, lose less water, and keep in order longer, than the valves in use at Fairmount.

3. Easier access for the water on the receiving side to get into the pump chamber, and air vessels so arranged as to aid the free access.

4 The discharge or delivery pipes to have a *gentle curve*, when compared with the short quarter circles on the present pumps, and this without taking up more horizontal space.

5. A simple method of neutralizing the shock in passing the centres, at the commencement of the stroke.

6. The method of connecting the air vessel to its pipe could not be made intelligible without the aid of a drawing, but I would here remark, that those at Fairmount are like a certain patent trap, in which "it was as hard to get in as it was to get out."

7. Larger air vessels, so that the speed of water will be kept nearly continuous in the "mains," not as at present by a series of pulsations, causing an absence of smoothness, the test of all perfect machinery.

8. A covering of copper or brass to the wrought-iron piston rods, thereby requiring less hard packing in the stuffing-box, and consequently less friction. The necessity of this may be seen in the *wavy wear* of those near the dam, consequent from the want of homogenity of wrought iron.

Of course, in a newspaper article, where space is limited, it is not possible to enter into details; nor could *all* the stroke I would wish (without having too short a connecting-rod) be obtained without removing the wheels further from the "forebay;" as the space now is, there could be from two and a half to three feet more stroke.

The time will come when the small water-wheels will need renewing; then ten feet stroke, or more, may be had by extending the front of the house a few feet nearer the river; and this could be done without marring the present beautiful appearance of the outside

I think I have said enough on the subject to prove that the pumps are susceptible of improvement, and per consequence put more water in the basin.

I hold myself, if it is wished by the Watering Committee of Councils, to furnish plans and specifications, to be submitted to one or more *unprejudiced* practical engineers, to convince them that I can plan an improved working pump that will discharge into the basin from 30 to 50 per cent. more water, according to space in the pump room, than can be done with pumps of the present arrangement. 7 Yours, A. C. JONES.

Impure Water.—Again are the people of Richmond and Kensington suffering from a most intolerable nuisance. The water which flows from the works is now unfit for use for any purpose, and offensive alike to the taste and smell. The basins are stagnant pools, whose putrid contents are in a great degree rendered what they are from the want of use. It is supposed that a general opening of the plugs would partly remedy the nuisance, though the reservoirs doubtless need a thorough cleansing. In the summer of 1856, and also 1857, the inhabitants of the District of Kensington were sorely afflicted in the same way. Such was the offensiveness of the water that numbers became sick by using it. Those who resided near the Delaware were obliged to go to the river and carry it to their dwellings in tubs and buckets. After much complaining, the City Fathers were induced to let on the Schuylkill water until the basins were cleansed. How long they are to remain in this condition it is difficult to tell.

[For the Public Ledger.]

The Scarcity of Water—Where the Defect Lies.

Aug 9/58

MESSRS. EDITORS: At the present time the public mind is much exercised about the scarcity of water in the city, and it may not be amiss to say a word on that subject and its cause. I am free to confess that absence, for a stated period, from this my native city, enables me to see many evidences of a want of progress for the last twenty years. For instance, the continued hostility, almost up to the present time, to passenger railroads; the same abortion of an ice boat for the Delaware river; no bridges on the Schuylkill river, between Market street and Gray's ferry; half cleaned streets; the unfinished state of the fountain in Franklin Square, &c. And last, though not least, the want of improvement in pumps, those at Fairmount having been so long considered perfect, (and, compared with some others since erected, they may be deemed so,) that it will appear to many like sacrilege to say anything to the contrary; yet I know that they are not perfect, and lose entirely too large a per centage of water, through their defective arrangement.

All the faults, with one exception, of those first made, are continued down to the present time; in truth one is a fac simile of the other—valve chambers, abrupt curves of delivery pipes, unprotected piston rods, and the very imperfect connection of the air vessels to the pipes leading to the ascending mains, &c.

The ridiculously small air vessels on the two pumps nearest the dam, which have been suffered to remain so for twenty years, is good proof of the want of progress; it is true that the air vessel on the pump driven by the turbine (1851) gives some show of the light dawning; but even this is not one half its proper capacity, and loses much of the utility due to its increased size by its imperfect attachment to the water pipe. So far as workmanship is concerned, those last erected are unexceptionable, and be it here understood that I only object to the arrangement of the pump proper, as it is well known that contractors must conform to the drawings furnished them, and, through the mistaken notion that the first made were perfection, all are alike, except a slight improvement in the valves, and some increase of stroke, and of this the longest (six feet) is entirely too short.

When the wheels are doing their best, the defective working of these pumps can be seen in the basin when the water is low, or by applying the ear to the ascending main; non professional persons have only to look at the variations (four feet) in the height of the jet issuing from the female figure, receiving its supply of water from the descending main, to detect the faulty working of the pump.

Now, Messrs Editors, I wish to put it on record, that with the same wheels (and speed of run) as motive power, with improvements which could have been made in the pumps, over thirty per cent. more water could be put in the basins than is now done by the pumps at Fairmount, and this without any increase of wear and tear.

This is no idle assertion, for I speak understandingly of the subject. If improvement has not taken place heretofore in the machinery, we may not expect to see much change for the better, now that political availability becomes the test for an engineer, for we all know from experience that political friends will have the erecting of new, or altering of old machinery; and the making of the most money out of the job, instead of the most perfect pump, will be the rule

The foolish idea that no further improvement can be made, accounts for the many poor pumps about Philadelphia, many resting satisfied that a pump of a given capacity is discharging its proper quantum of water into the basin, whether it does so or not.

The present scarcity of water will be used as a lever to have new works erected; but would it not be better, and more economical, to improve those which we have, at a tythe of the expense, than to perpetuate more defective machinery. After an improvement is made at the "fountain head," then extend from the basin additional supply pipes, without their having any connection with the present street pipes, until they reach certain distant points, where it is known that a scarcity of water prevails, there to be attached to the old distributing pipes, and thus equalizing the supply to all. Carry out these suggestions, and the necessity for new works will be postponed for twenty years.

Next to a better supply of water comes the use of it in extinguishing fires, and I should like to have pointed out any improvement in the pump of the fire engines from the days of Pat Lyon down to the last steam fire engine. Much tinsel and gew gaws have been elaborated on the outside of "der masheen," but all the defects of the pump and its appendages are continued, as can be seen by the stream of water issuing from the branch pipe.

A few days since, your reporter, in speaking of a new fire engine, particularizes the folding breaks, and their striking on rubber blocks, as if these were new. I claim to be the original inventor of both, and they were introduced on a side lever engine, built from my plans, at New Orleans, La., in the year 1850. Yours, A. C. JONES

REPORT OF THE PARK COMMISSIONERS.

The Committee on Plans and Improvements respectfully report that the resolution of the commission, requesting them to consider and report within what boundaries, in their judgment, it is desirable and proper that the contemplated park should be contained, has received the careful attention its importance demands. The committee propose that it be recommended by the commission to the City Councils that the boundaries of the Park be fixed and limited as follows, viz:

Beginning at a point on the northeasterly line of property owned and occupied by the Reading Railroad Company, near the city bridge, over the river Schuylkill, at the Falls; extending thence in a southwesterly direction to the middle of Ford road; thence by a line passing through the southeast corner of Forty-ninth and Lebanon streets to George's Run; thence along the said run to a point fourteen hundred and eighty-seven and a half feet from the middle of the Pennsylvania Railroad, measured at right angles thereto; thence by a straight line through the northeast corner of Forty-third and Hancock streets to the northerly side of Girard avenue near Fortieth street; thence by the said northerly line of Girard avenue to the easterly side of the Junction Railroad as now used; thence by the said easterly side of the Junction Railroad and the Pennsylvania Railroad to the north side of Haverford street; thence by the northerly side of said Haverford street to the westerly side of Bridgewater street; thence by said Bridgewater street to the north line of Bridge street; thence by said Bridge street to the west abutment of the Suspension Bridge; thence by the northwesterly side of the Suspension Bridge and Callowhill street to the angle in said street, on the southwesterly side of Fairmount Basin; thence by the northerly side of Callowhill and Biddle streets to the westerly side of Twenty-fifth street; thence by the said Twenty fifth street to the southwesterly side of Pennsylvania avenue; thence by the said southwesterly side of Pennsylvania avenue to the west side of Thirty-third street; thence across said Pennsylvania avenue to the northwest corner of Pennsylvania avenue and Thirty-third street; thence in a straight line to the northwest corner of Columbia avenue and Fortieth street; thence in a direct line to the northeast corner of Susquehanna avenue and Thirty-seventh street, or to a point where said line will intersect the southerly bounds of property owned by the Laurel Hill Cemetery Company; and by said property line to such a distance from the shore line of the river Schuylkill as will permit the location of a carriage road one hundred feet wide upon its margin; thence along the said river shore, and its several courses, as may be most practicable, at the same distance as above specified, (provided said distance shall not exceed one hundred and fifty feet,) to a point opposite the intersection of the Ridge turnpike and School lane; thence northwardly to a point on the southwesterly side of road, opposite to the southeasterly side of said School lane; thence by the southwesterly side of said turnpike road to the southeasterly side of the Wissahickon creek; thence by the several courses of the southeasterly side of Wissahickon creek to the Schuylkill river; thence across the water course of said river to the northeasterly line of the Reading Railroad Company's property, as now used at the city boundary line; thence along the said northeasterly line as now occupied and used by said railroad company to the place of beginning. The committee further recommend that an avenue not less than one hundred feet in width be laid out and opened along the entire outer line of the Park, commencing at Girard avenue, and thence extending to the western end of the Falls bridge; and extending on the eastern side from the intersection of Pennsylvania avenue and Thirty-third street northward by the Park boundary to the line of Laurel Hill Cemetery, as extended, and thence westwardly by said line to the river. They further recommend that these lines be defined and established as constituting the permanent boundaries of the Park; but they also recommend that a carriage-way of noble proportions be laid out, commencing at Belmont avenue at a point south of City avenue to the foot of City avenue, at which point a bridge should be constructed to the mouth of the Wissahickon on the opposite shore. They also recommend that the control of the Wissahickon creek and both shores thereof be acquired by the city and used in connection with the Park. Within these boundaries are contained as nearly as the committee can estimate, including the water area and excluding that proposed on the west bank of the river and the lines of the Wissahickon, about 1,619 acres, divided as follows:

On the western side of the river, from Bridge street to Girard avenue	104	
North of Girard avenue	930	
Total on the west bank		1,034
On the east side of the river, in Fairmount, Lemon Hill, and Sedgely estates	140	
From thirty-third street and Pennsylvania avenue to Laurel Hill purchase	117	
In the road passing along the front of Laurel Hill to Upper Falls village	16	
In the meadow and wooded knoll between the Ridge road and the river, extending to the mouth of the Wissahickon	40	
In Peters' island	1 1-5	
Total on the east side		314 1-5
Water area in the river from Fairmount to the Wissahickon	270	
Total land and water area		1,618 1-5

Of this land about 600 acres on the western side of the river, and 151 acres on the eastern side, are beyond the limits heretofore by law embraced in the Park, but their possession is essential to the protection of the purity of the water, and the establishment of such open grounds as the health and enjoyment of the large population for which we must provide will speedily require. This additional ground is more remote, and therefore much less costly than much of the ground which is already contained in the Park.

Six hundred and eighty-five acres of the 1,691, including the water area, are already owned by the city, and have been paid for, leaving about 934 acres of the proposed Park to be acquired.

In substance, they contemplate a carriage road on either margin of the river, extending from the Wire Bridge upon the western side to City avenue, and upon the eastern side to the mouth of the Wissahickon; and these points being united by a bridge, the road so extended along the shores of the Wissahickon creek—thus controlling the banks of the river and its chiefest tributary, and securing the purity of their waters. The outer lines on either shore are so adjusted as to command such adjacent grounds as, by their natural beauty and extent, may best afford a noble Park for the health and enjoyment of all the people forever.

Accompanying the report is an ordinance for the consideration of Councils, and an act for the consideration of the Legislature, authorizing the purchase of the ground and such other legal authority as may be deemed necessary. The act for the consideration of the Legislature provides—

Section one, for the boundaries of the Park.

Section two vests the ownership of the ground in the city of Philadelphia excepting therefrom so much as shall be acquired by the Schuylkill Navigation Company, the Philadelphia and Reading Company, the Junction and connecting railroads, for the execution of their franchises as now provided by law.

Section three releases so much of the ground as was embraced in the act of 26th of March, 1867, with the same effect as if it had never been included.

Section fourth provides that all grounds taken within the boundaries of the Fairmount Park, by the first section, shall be subject to all the powers and control given by this act; and the owners of all ground taken for the Park shall be compensated as in said act provided.

Section fifth empowers the commissioners to vacate any street or road except Girard avenue, and to open for public use such other roads, avenues, and streets therein as they deem necessary.

Section sixth provides for the alteration of the plan of surveys of the Twenty-fourth ward as lies between Fairmount Park, the Pennsylvania Railroad, and the City avenue, and of the contiguous parts of the Twentieth and Twenty-eighth wards, and for the laying out of an avenue as one of the streets of the city, of the width of not less than one hundred feet, as a boundary of the Park on the southwest, west and northwest sides thereof, extending from Girard avenue to the river Schuylkill, at or near the Falls bridge, and also upon the eastern side of the river, from the intersection of Pennsylvania avenue and Thirty-third street, northward along the boundary of said Park to the river Schuylkill.

Section seven gives the commissioners jurisdiction to the breadth of the footway next the Park, in all avenues or streets which bound upon it, and they shall direct the laying out of footways, curbing, paving, planting trees, &c., the footways not to be less than twenty feet in width on any avenue or street of the width of one hundred feet, and of like proportion upon any street or avenue of a greater or less width, unless directed otherwise by the commissioners.

Section eight provides that in assessing property, compensation for buildings will be taken, but all buildings, machinery, &c., not required by the Park commissioners, shall be removed by the owners when payment of the compensation awarded is tendered.

Section nine provides for making reports to the courts from time to time, and the reports may be acted on separately.

Section ten authorizes the city to make loans for such moneys as shall be necessary to make compensation for grounds heretofore taken or to be taken, for all culverts, and other means of preserving the property of the Schuylkill, and the city shall annually assess taxes for keeping in repairs and good order the said Park, provide for the payment of interest, and the usual sinking fund.

Section eleven authorizes the commissioners to appoint officers agents, and subordinates, prescribes their duties and compensation.

Section twelve provides for the sale and transfer of any land beyond the Park limits when it is necessary to purchase an entire tract.

Section thirteen requires the commissioners to make an annual report to the Mayor.

Section fourteen authorizes the commissioners to lease from year to year all houses and buildings within the Park limits, the rents to be paid into the city treasury.

Section fifteen places all houses for boats or skating clubs subordinate to public purposes, and they shall be subject to the regulations of the commissioners.

Section sixteen empowers the commissioners to accept, in the name of the city, devises, bequests, and donations of land and money, objects of art, natural history, &c.

Section seventeen prohibits commissioners or employers from creating any debts except by express authority of the Board.

Section eighteen empowers the Commissioners to govern, manage, lay out, plant and ornament the Park, construct proper bridges, buildings, railways, and improvements therein, and repress all disorders

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GIVE IT A FAIR TRIAL.

Editor EVENING STAR.

Now that the New York Duplex has got to run, we presume that the promised test of its capabilities will soon be made, as the contractor, we believe, has already made application for payment on account.

From the manner in which this contract was perseveringly given out, together with the outrageous price to be paid, and the pacifying promises of so much greater results to be achieved by this apparatus over what was considered possible to be done in our own village, we solemnly protest against any of the parties interested in the patent from New York, or those who were instrumental in assigning the contract here, taking any active part in the said test, as it is but reasonable to expect that all those gentlemen are too deeply interested to sanction an impartial trial. That engine must come up to the standard, if they are to be judges.

There are plenty of honorable men in Philadelphia, good mechanics too, who can be readily selected to give the engine a fair and honest trial. We must insist upon this being done, for now comes the important part, to discover whether this machine can so far eclipse our own manufacture, as represented to City Councils by Mr. Graeff, and whether the fact of its being built in New York, would make it worth at least twice as much, as though it had been built in Philadelphia. SCRIBER.

The People's Gas Works.

Editors of Sunday Transcript:—The undersigned submits the following questions to be answered by those interested.

1st. Are the Philadelphia Gas Works managed by Trustees; or are they managed and controled by *one* Trustee and the Chief Engineer?

2d. Are the Trustee and the Engineer family relatives?

3d. Are the Gas Works managed for the benefit of the officials and the loan holders, exclusively?

4th. Are the Engineer's time devoted to the benefit of the Gas Works, or is it divided between the Gas Works and the Minehill Railroad?

5th. Are there not *three* Engineers employed at the Gas Works?

6th. Why was the third one appointed at the time the works were yielding so little that consumers had to furnish their own meters, pay for the service pipe also, and then sign a conveyance of the pipe to the Gas Works?

7th. Why were the the poor laborers' wages reduced, about the same time, to a starving price?

8th. Is the third engineer *a relative* of the other two engineers?

9th. Did the Engineer and two Trustees join the Know Nothing order, and if so, for what purpose?

10th. Why was the office of Cashier created?

11th. Did the Chief Engineer give $25 to the Know Nothing order to defeat the Democratic party?

12th. Did he afterwards join the Democrats, and *why?*

13th. Was it because they gained power?

14th. Are the Gas Works any benefit to the citizens of Philadelphia?

15th. Could a company be formed to supply gas cheaper? CITIZEN.

Ordinance, April 28, 1814.—Section 1. That all persons who may intend to discontinue the use of the Schuylkill water, shall give notice thereof to the Register, at the office of the Watering Committee, on or before the 30th day of November in any one year, and on their failure so to do, shall be chargeable with, and pay the whole rent for the year next ensuing.

Section 4. *It is further enacted*, That all persons who may remove from, or dispose of the premises they have contracted to be supplied with water, shall transfer the same on the books at the office of the Watering Committee, otherwise they are taken to be still parties to the said contracts, and chargeable with the rents due and to become due for the same, and liable to be sued therefor.

☞ *Transfers made at the Office of the Register, free of charge.*

Ordinance, May 21, 1818.—Section 1. Every person who, on or after the first day of November next, may be supplied with the Schuylkill water from a branch connected with a private pipe, shall have a sufficient stop-cock affixed to the said branch, as near as conveniently may be to the private pipe aforesaid, so as to stop the supply of water through the said branch, when requisite, and not interrupt the supply to other persons having a right to use the pipe with which such connection may be formed; and every person who may be supplied with water from a private pipe, having a branch or branches connected therewith, as aforesaid, shall, in like manner, have a sufficient stop-cock affixed to such private pipe, above the said branch or branches, for the purpose aforesaid; and in case of neglect or refusal to have such sufficient stop-cock affixed, as aforesaid, every person so offending shall forfeit and pay the sum of *five dollars*.

Section 2. All plumbers, or other persons who may hereafter be employed to lay branch pipes, communications with private pipes, or private pipes having a branch or branches, as aforesaid, or to alter or repair such branch pipes or private pipes, as aforesaid, are hereby required and enjoined to affix to such branch and private pipes, sufficient stop-cocks, with proper openings to the same, walled up and covered as herein mentioned, under the penalty of *ten dollars* for every neglect thereof.

Ordinance, December 9, 1847.—Section 2. That if the said water is used for any other purpose, or through a ferule of any greater size, or by means of any other fixtures and attachments than are expressed in such permit, aforesaid, it shall be the duty of the Superintendent of the Water Works to stop off the supply of water authorized to be used by such permit, notwithstanding the water rent for the same may have been paid.

Ordinance, June 20, 1850.—Section 1. That from and after the passage hereof, no permit shall issue for the introduction of the water into, or for the extension of any pipe used for the conveyance of such water in any premises within the city of Philadelphia, until the owner of such premises, or his or her authorized agent, shall have given his or her consent thereto, in writing.

Ordinance, December 26, 1854.—Section 1. That all water rents shall be payable to the Register of Water Rents, at his Office, annually, in advance, on the second Monday of January; and upon all water rents unpaid upon the first day of April, in any year, there shall be charged the sum of *five* per centum, and upon all rents unpaid upon the first day of July in any year, there shall be charged an additional sum of *ten* per centum: And if any such rent, with the said additional charges, shall remain unpaid on the first day of September, in any year, the said Register shall notify the Chief Engineer of the Water Works of the name of such delinquents, who shall cause the ferules of all such delinquent water tenants to be detached from the pipe of conduit, and suit be instituted for the recovery of such rent; and after such ferules shall have been detached, the water shall not again be supplied or furnished to the said premises except upon the payment of all arrears of water rent, and the sum of *two* dollars for expenses incurred; and a printed notice containing the first section hereof shall be left upon the premises.

Section 2. The said Register shall cause notice to be inserted in two or more of the daily newspapers of the city, and published in posted handbills, of the time and place, when and where the water rents are payable, and the penalties for delay in, and for the non-payment thereof.

Section 3. The water tenants of the city shall be charged for the water for the year 1855, at the same rate they were respectively charged for water for the year 1854; but all permits issued for the year 1855 shall be charged at the rates of the Corporation of the Mayor, Aldermen and Citizens of Philadelphia for the year 1854.

Ordinance, November 12, 1855.—Section 1. That the water tenants of the city corporation shall be charged for the use of water furnished by the same for the year 1856, and thereafter, the same rate which was charged by the Corporation of the Mayor, Aldermen and Citizens of Philadelphia for the year 1854, and all ordinances inconsistent herewith be and the same are hereby repealed.

A Supplement to an Ordinance, organizing the Department for Supplying the City with Water. Approved October 3d, 1854.

Section 1 The Select and Common Councils of the City of Philadelphia do ordain, That the Chief Engineer of the Water Department, under the supervision of the Committee on Water Works, is hereby authorized and required to re-assess all properties subject to water rates in the city of Philadelphia, and cause to be made the necessary duplicates for the use of the Register of Water Rents; and for this purpose he is subject to the supervision aforesaid authorized, and empowered to employ such agent or agents as may be necessary to complete said re-assessment on or before the first day of December, A. D. 1858; and the said agents are authorized and required to enter all property where the water pipes are laid, to examine the same, and make a full and accurate description of all hydrants, boilers, baths, water closets, sinks, wash paves, and other appliances for the use of water, of whatever kind or character thereon, giving the number of each house, store, shop and factory, with the purpose for which it may be used, and the name of the street, lane, alley or court, where located; and also to note each dwelling house or other building where the water is not introduced, as well as the name of the owner or owners thereof, in a book or books, which shall be provided for that purpose, and return said books to the office of the Water Department as fast as the same may be completed. And it shall be the duty of the Engineer aforesaid to cause to be made out such duplicates as will enable the department to assess against each house, houses or other buildings so re assessed, a rate of water rent in conformity with the rules, regulations and charges now fixed by the Water Department: Provided, That the whole cost of re-assessing and making the duplicates provided for in this ordinance shall not exceed the sum of three thousand dollars.

126

Mismanagement at the Water-Works.

To the Editors of the Sunday Dispatch:—The importance of the subject to the people of this city is my excuse for again asking space for some more remarks in relation to the doings at Fairmount Water-Works. I took the trouble to send my printed communications and diagrams to two members of each branch of the City Councils, selecting them from both political parties. Two meetings have taken place since, but no notice as yet of the mismanagement at Fairmount. I now appeal to the tax-payers, who are most interested, to see that their money is not wastefully expended.

As it seems there is no supervisory power in the city government to arrest a wasteful expenditure of money by crude arrangements made by incompetent persons holding stations for which they are mentally and practically unfitted, the tax-payers should demand that a Commission of Engineers, of known standing, (not connected with the city offices, nor of the whitewashing order,) examine all of this "extension" business, and, my word for it, the city will be benefited thereby. This investigation gains more importance from the revelations of your correspondent, "Mechanist," who clearly points out defect on defect in the mill-house, of these right-angled engineers. If all of these stupid conceptions in the mill-house and the line of pipe to the basin are allowed to remain, then, instead of three turbines, we shall have but little more than the effective power of one in putting water in the reservoir. Your correspondent "Mechanist" is right about the pipes west of the causeway being piled one above the other, and making any repairs to the middle or lower one impossible without removing the others. At the time my first article was penned, the pipes, then being extended west of the causeway, were in horizontal section, and I took it for granted that they would be so continued to the mill-house. My next visit proved that I had given credit where no credit was due, and I then wrote that, "from *the beginning to the end*, the whole of the arrangement was defective," and pointed out a much shorter direct route, in which all the pipes would be easy of access for repairs.

"Mechanist" states that the parallel widening of the causeway "cannot be done on account of the flume," &c. On this point he is in error; the masonry over the flume is amply strong to sustain one leg of an arch, for after the three pipes were laid and filled in, all the abutments of the arches could be knocked away, and the pipes will support their own weight and all the visitors passing over them; but it is not necessary to have arches at all; wrought or cast iron girders can be thrown from pier to pier, tied and filled in with masonry, for a superstructure for the pipes to rest on, and but slight ingenuity would be required to devise means to operate the flume gates from the south side or through the causeway.

"Mechanist" thinks I overrate the disadvantage the water has to contend with in the short pipe at the foot of the folly tower; in spite of its size and rounded (not curved) corners, the water will impinge against the opposite side, and if this pipe was of glass, and many pellets of cork entered with the water from the three pipes, it would be seen that the most of them would shoot across and strike against the side of the pipe before taking an endwise course. Hundreds of persons have seen the well-defined stream of turbid water from the Mississippi river, extending for fifteen miles into the Gulf of Mexico; and I have frequently witnessed a four mile current from one of its five mouths extend for over five miles in a straight line from the land, and yet a current of nearly two miles per hour in these pipes will not shoot across a space of four feet, but, as in duty bound, will turn this rounded corner. This would be good logic for a right-angled engineer, but is unworthy of "Mechanist." But, after all, this is only a difference of opinion, and does not alter the worthlessness of this roundabout folly tower route.

The writer of this can refer to many published articles, in which he pointed out the injury to the available power at Fairmount by the filling of the river below with useless bridge piers in the channel, damming up the water and lessening the effective head; and years ago improvements to the old pumps were suggested by which one-third more water could have been put in the basins, and thus dispensed with the enormous expense of this "extension," and saved the city the disgrace from this wholesale blundering. But I must give the credit to the powers that be of carrying out one of my suggestions, in "conveying the water to distant points and there connect with the street pipes." Our locality *now* has a plentiful supply of water, for which the residents are thankful.

As a Philadelphian, I believe I have done my share in watching over the interest of our Water-Works. I will now turn the matter over to "Mechanist" and others, who should consider it their duty to assist in staying this shameful blundering.

LOCOMOTIVE.

[For the Public Ledger.]

Turbine Wheels—The Minority of the Watering Committee.

MESSRS EDITORS:—I notice an article in your paper of the 4th, over the signature of Wm. Neal, purporting to be a synopsis of the position of the Minority of the Watering Committee, which so grossly misrepresents the facts of the case, and is so perverted and disingenuous, and reflects so unjustly on the action of the majority, that justice to myself, as well as a proper regard for my colleagues, makes a reply imperative.

He calls it a complicated subject, but does not deign to tell how or why. I regard it as a very simple and plain one, easy of elucidation. The city of Philadelphia had resolved to increase her pumping power, and was seeking a wheel for a particular purpose, under very peculiar circumstances, for pumping, *the most trying of all work* on machinery, and under a constantly varying head of from 6 to 14 feet twice in twenty-four hours, occasioned by the ebb and flow of the tide. It was highly important to know whether a better wheel of any kind could be produced than the "Jouval Turbine Wheel," to operate under the peculiar circumstances of the case. Hence the action of the former Committee on Water works, in instituting model tests to ascertain the fact.

Mr. Neal alleges that Mr. Stephenson was the successful competitor in the trial of model wheels, but the contract was given to Mr. Geyelin, whose wheel was the second best.

At the first trial of his vertical Jouval Turbine Wheel, Mr. G. exceeded all his competitors some 9 per cent Then Mr. S abandons the wheel he introduced, and adopted our present contractor's, and did exceed our contractor some 6½ per cent., after which Mr. G. applied for a new trial, and was refused, on account of circumstances the department could not control. Now, I appeal to a candid public to say, whether the fact is verified, that Mr. S. was the successful competitor? It can only be decided by a future trial. Mr. Neal says: The former Chairman of the Committee on Water Works, who is a millwright of twenty years' experience, declared that Mr. S.'s wheel did give the best result on every trial. The Chief Engineer never made such report; nor does Mr. Neal attempt to show that ever he said so. The allegation is not corroborated by the Chief Engineer, but he absolutely denies it.

Mr. Neal quotes the Chief Engineer's letter of invitation to competitors of wheels, wherein he says: "These experiments are undertaken to determine the wheel best adapted—all things considered, for our Fairmount Works. Two of the wheels approved, will be ordered immediately." Mr. Neal says not one word was said about cost of wheels, the great object being to obtain the wheel that would throw the most water into the reservoir, under the same head What did the Engineer mean when he made the proviso, "all things considered?" Let him explain. In his report to Select Council (page 43, see appendix to journal of Select Council,) He says "great care was taken to incur no obligations, either to the wheelmakers or to the parties to whom invitations were addressed for propositions, to build the wheels, gearing and pumps, leaving the city free from any embarrassments or obligations, to determine what would be for her best interests." These were the great considerations of the C. E., and on no occasion did he lose sight of this important duty. He had many written and oral applications to know whether per centage of power was to govern the case. His uniform reply was the same, "All things are to be considered" Showing beyond a doubt that the C. E. had kept the city free from all obligations, and that its faith or honor was in no way implicated. If the city was pledged, how could the men entertaining these views for one mo-

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Commissioners of West Philadelphia.—The Board held a stated meeting on Tuesday evening, when a communication was presented and read from William M. Evans, setting forth his claim against the District, for building a culvert and grading Andrew street, in 1846, amounting to $202. Referred to the Committee on Accounts.

Petitions were presented, asking the Board to take immediate action in the matter of introducing water into the District. A communication from Mr. Miller, the surveyor, was read, to the effect that the only permanent plan of supplying the District with water, will be to erect a reservoir on the western part of the Lansdown estate in Blockley Township, near the Monument Road, (about three miles from Market street Bridge,) and the necessary works, engines, &c., on the Schuylkill river, near the foot of the Inclined Plane. The whole subject was referred to a special committee, consisting of Messrs. Bicknell, Natt and Simpson.

The Treasurer reported a balance of $35 81 in the Treasury. 323

The Water Supply.

We endeavored to show, on Tuesday, that in building a reservoir at Flat Rock, as is now proposed, it would be better so to modify the proposed plan as to place the large Cornish engine there instead of lower down the river, and to connect the mains with the northern part of the city, whereby we should gain all the height between the level of the water at Flat Rock and that at Fairmount, and, besides, obtain purer water. This view is not presented as new, but was strongly urged by the Engineer-in-Chief, Mr. H. P. M. BIRKINBINE, in answer to a Resolution of Inquiry by Councils. We give a portion of his Report, dated September, 1859, which will explain the whole matter very clearly:—

REPORT ON A SUPPLY OF WATER FOR THE TWENTY-FIRST WARD.

To the Select and Common Councils of the City of Philadelphia:—

Gentlemen:—In answer to the following Resolution, "That the Chief Engineer of the Water Department be, and he is hereby instructed to report to the Councils the expediency of providing for the erection of water works in the upper end of the Twenty-first Ward, for the purpose of providing the northern section of the city with a better supply of water, and the probable cost thereof," I would report:—That no appropriation having been made for making the necessary surveys and plans, it became necessary to make them with the assistance of such persons in the employment of the department, as were best qualified. The examinations have been but superficially made, in order that the department might present the subject before you, and if, upon consideration, you deem it expedient to prosecute the inquiries further, an appropriation, say of five hundred dollars, will be necessary to make the surveys, drawings, plans and estimates.

The section of the city embraced in the Resolution, viz., Twenty-first Ward, comprising Manayunk and Roxborough, contains a population numbering about twelve thousand. Of these, at least three thousand are operatives employed in the different factories. This part of the city is much in need of a supply of water for culinary, manufacturing and sanitary purposes, and for protection against fire, as the property in the manufactories is of great value, and now almost entirely without protection against fire, except so far as they are supplied with private water works, which can be of little use, even in case of fire, to the mills in which they are located, and of none to the surrounding properties.

From the dense population of parts of the district, the wells have become so contaminated, that the water in but few of them is now fit for culinary purposes. The necessity of a supply for manufacturing and mechanical purposes, is evident.

In addition to the Twenty-first Ward, the greater portion of the Twentieth Ward is without an adequate supply of water; and even in those parts in which water mains are now laid, the head is so slight that water can only be drawn at certain times of the day, and then not in the upper stories of the houses

This district is rapidly filling up with inhabitants, and the difficulty experienced in procuring water from the present mains is daily becoming greater, while none of the reservoirs are sufficiently elevated to supply that part of the city bounded on the south by Girard avenue, east by Eleventh to Dauphin avenue, then south by Dauphin avenue to Sixth street, comprising a large and important district.

The water works in the Twenty-second Ward (that of the Germantown company), will soon be found inadequate, if, indeed, they are not now, for the rapidly increasing population of that Ward. All this section of the city, which will, in a few years, be teeming with inhabitants, and does not now contain less than seventy-five thousand, must look for a supply of water to reservoirs of a greater altitude than any now constructed by the city, as the greater part of the surface of the ground is higher than the Spring Garden reservoir, which is one hundred and fifteen feet above the dam, and the highest of all the reservoirs.

LOCATION OF WORKS.—A short distance above the Flat Rock dam, on the Schuylkill river, there are several sites well adapted for locating a water works. There is, perhaps, no location on the Schuylkill where purer or better water could be procured, than from this dam, there being no towns for some distance above, and but little, if any, manufacturing. The water is deep, and the dam is fitted with sluices, so that there need be no fear of sediment accumulating in it, as it now does in the Fairmount dam; and the shores, for miles, are protected by hills. Pumping machinery could be erected above the dam, to raise the water to an elevation of two hundred feet, and hills of sufficient elevation can also be found in the neighborhood, for reservoirs, or a reservoir of very large capacity could be constructed at a comparatively small expense, by taking advantage of one of the ravines near the pumping machinery, so that, in many respects, this is a most desirable location. This would command Manayunk, Falls, Kenderton, and, in fact, most of the settled district above mentioned. The reservoir would be of the same elevation as the stand-pipe of the Twenty-fourth Ward works, viz., two hundred and thirty feet above tide, and should the works ever be connected, they could mutually assist each other.

For supplying Roxborough and Germantown, it would require a reservoir elevated much above this one, say one hundred and fifty feet higher; this would be the same level with that of the Germantown Water Company's reservoir at Mount Airy. Locations for a reservoir as above described could be found much nearer the centre of the city, but it would not be safe to locate works near Manayunk. The distance between Fairmount and Manayunk allows time for all impurities to separate from the water, but should works be placed a short distance below that town, this would not be the case, and the water would most probably be found objectionable.

THE AMOUNT OF WATER NECESSARY.—At present, it is probable one million gallons per day would be found sufficient for Manayunk and Roxborough, but should the works embrace Germantown, and all of the Twentieth Ward, three millions would be the amount required at present. The increase, which will no doubt be rapid, when once water is introduced, will make works necessary for an average supply of six millions per day to the first reservoir, and two millions to the second or higher reservoir.

ENGINES, RESERVOIR AND MAINS.—The experience of the department is decidedly in favor of Cornish pumping engines. It has now in operation one high pressure reciprocating engine, three condensing reciprocating engines, two direct acting (Bull) Cornish engines, and one balance beam Cornish engine, and we find the difference in the consumption of coal in pumping a given amount of water a given height, between some of the reciprocating engines, to be as fifteen to twenty-three, and between the best reciprocating engines and the Cornish engines, to be as twenty-three to forty-five. It is therefore an established fact that the Cornish engines, although most expensive in first cost, are in the end the most economical.

To pump six millions gallons per day, two hundred feet high, would require a pump thirty inches diameter of plunger, and twelve feet stroke of piston; a steam cylinder seventy-two inches diameter, and twelve feet stroke of piston.

The main leading from the pump to the reservoir should be thirty inches diameter, and it will require about two thousand feet to reach convenient localities for erecting a store reservoir, which should hold at least fifty millions of gallons.

There are several locations where reservoirs of even larger dimensions can be constructed at very moderate expense, within the above described distance, from convenient points for erecting pumping machinery at the river. At this reservoir a smaller pumping engine, though of similar character, should be erected to force water into a second reservoir, about one hundred and fifty feet higher than the first described. This engine would require to be about one third the capacity of the first, and the reservoir in the same proportion, and if Germantown should receive its supply from this source, the reservoir of that company could be used by erecting a stand pipe at the engine house.

DISTRIBUTING MAIN.—A thirty inch main should lead from the first reservoir to a central point in the Twenty-first Ward, say Dauphin and Broad streets; this would supply Manayunk and the lower ends of the Twenty-first Ward, the Twentieth Ward, and such parts of the Nineteenth and Twenty-third Wards as are too elevated for the present reservoirs.

COST OF WORKS.—The expenses of works as above described, viz:—Six millions of gallons to the first reservoir, and two millions of gallons to the second; two engines; reservoirs to contain fifty millions of gallons; thirty inch pumping main, and a stand pipe to second engine, would cost about one hundred and eighty thousand dollars, without any distributing mains, which would be about six miles long.

It would not be safe to estimate the cost of the works at less than five hundred thousand dollars, without service mains. the cost of these being paid by the frontage tax levied on properties in front of which the pipe is laid. Should you deem it advisable to prosecute the work, more careful surveys and definate estimates will be necessary, but the result will not vary materially from the above estimate.

The difference between the amount mentioned here, $500,000, and the additional expense estimated in a paper on this subject published on Tuesday, viz.: $300,000, arises from the fact that the execution of this work supersedes other work amounting to $200,000. *The additional cost* is, therefore, $300,000. The question is now simply this:—A reservoir and engine must be built at Flat Rock—shall they be made available for supplying all the northern part of the city with water, and so relieving the existing works as to make them to furnish abundance to all the rest of the city, or shall they only supply their own immediate neighborhood? If the latter plan is adopted, where shall we find ground high enough to build the new reservoir now needed to supply all the northern part of the city at its high levels?

What will Councils Do?

The eyes of the public are now turned upon City Councils, to see what course will be pursued by that body in the election of the Heads of Departments in general, and of the Departments of Water and Highways in particular.

For the office of Chief Engineer to the Water Department, there are two candidates, the present incumbent, and Mr. O. H. P. PARKER, late Chairman of the Water Committee in Select Council. Which will be the choice of Councils is a matter that cannot yet be foretold, as no caucus has been held; but Councils, we think, would do well to ascertain the state of the popular pulse upon a subject so important, before they take action upon it. A dispassionate view of the matter forces upon us the conclusion that the re-election of Mr. BIRKENBINE would be little short of a calamity, and for reasons which, we think, cannot be abnegated even by Mr. BERKINBINE's most indulgent friends.

Imprimis then, Mr. BIRKENBINE has been engaged in business pursuits, and in connection with various parties. The experience of his former partner, Mr. TROTTER, we believe, has been the experience of them all, and it is a fatal error to suppose that a man, incompetent to conduct his own business, is a proper medium for the annual expenditure of large sums of public moneys. Mr. BIRKENBINE is in everything a visionary, a man constantly finding mare's nests, chasing will-o-the-wisps through marsh and quagmire, in all his actions as fickle and inconstant as the winds of heaven. He aims at being a great man without the necessary qualifications for greatness, instead of contenting himself with the biblical assurance that where God has given little, His demands for a return are in due proportion. There is besides in the character of Mr. BIRKENBINE, that charlatanry and love of mysticism peculiar to little minds, behind which he ever shelters himself from remark or criticism. Around the duties of his office he throws an air of mystery, affecting profound skill and science as an engineer, magnifying with grandiloquent and high sounding phraseology, the simplest operations falling to his duty. This weakness is exemplified in the lithographs of stop-cocks and other nick-nacks, periodically paraded before Councils and the people, all of which are ostentiously underlined, "*Planned and designed by H. P. M. Birkenbine, Esq.*" Though these gimcracks generally are valueless, the lithographing still continues; but the Chief Engineer is not *quite* so obtuse as to lithograph his bursted air chests and other signal and expensive failures, that have resulted from the borrowed and only half-conceived ideas of other and better men. As candid journalists, solicitous only that competent men shall fill such important positions, we cannot continue blind to patent facts. The only portion of his department conducted in a proper manner, is that of the registrar, where Messrs. WHITE and MOORE have won that universal approbation which Mr. BIRKENBINE is now seeking to appropriate as due to himself. But as to that gentleman, since the day of his induction to office, we can see as his only record a narrow minded, mystified policy, and a constant endeavor to throw dust into the eyes of the community. The policy of this official has been to under-estimate the expense of every improvement he has undertaken, (excepting the cost of laying the 30 inch pipe down Broad street), and in retarding the progress of the work of the new wheel houses, so that he might a third time secure his re-election. In a species of low cunning, Mr. BIRKENBINE abounds. He always manages to have something on hand on the first of each July, for the express purpose of aiding him in his re-election, and was heard to boast shortly after his first election, that he would hold the position for ten years, or as long as he chose to retain it.

With the experience they have now so dearly gained, we cannot conceive that Councils will hazard a re-election of Mr. BIRKENBINE, and especially because he has already evinced a palpable and unmistakable lack of the requisite ability to construct the new pumps, wheel houses, turbine water wheels, and other works involved in the projected improvements in the *materiel* of the department. If carried out as Mr. BIRKENBINE has commenced them, the entire affair will be a botch, and a crying disgrace to the city. The cost of the construction of the wheel house, water wheels and pumps, and the raising of Corinthian avenue basin, will cost the city, before they are finished, at least from fifty to seventy thousand dollars more than Mr. BIRKENBINE's original estimate; and, besides this, before the new work can be of any available use to the city, a new main, leading from the new pumps at Fairmount to Corinthian avenue basin, a distance of about three thousand feet, and at a cost of at least eighty-five or ninety thousand dollars, must first be laid. This main must be four in diameter, to carry away to advantage the water from six pumps of eighteen inches diameter and six feet stroke. The necessity for this main has been carefully concealed from Councils by Mr. BIRKENBINE. Mr. BIRKENBINE's plan is to hold this in reserve until the other work is done, then to come to Councils and ask for a *loan* to lay this new four foot main from the new pumps to Corinthian avenue basin. This is to be another job, in readiness for next July, to secure his election for a fourth term. And thus, he trusts, it will go on from year to year, as long as Councils possess noses of wax to be moulded by his superior manipulation.

The estimated cost of raising the Corinthian avenue basin was $32,000. Mr. BIRKENBINE has already expended $41,000, and it is not yet finished. The estimated cost of constructing the mill house at Fairmount was $17,000. There already has been expended about $23,000, and it is not yet *half* completed. How much it will require to complete it, Councils had better begin seriously to inquire. From his equivocal course Mr. BIRKENBINE has got the water wheel men and the Committee on Water in a general squabble. If continued longer in power, we much fear the whole department will be so deranged and demoralised as to render impossible an extrication from the gathering difficulties resulting from his blunders and incompetency.

That the city has been greatly a loser by the visionary schemes of Mr. BIRKENBINE is a fact that we cannot deny. As a private citizen we have nothing to say against him; and, though he has exercised a petty tyranny by ordering the fountains at Fairmount to be stopped on Sunday, we do not place it to his discredit. But of his utter incompetency for the duties of the position into which he has managed to work himself, we are well assured. We ask Councils to look at the question in all its bearings, and then say if Mr. BIRKENBINE is again to be inflicted upon the suffering tax-payers. We could amplify the record of his incompetency to a much farther extent than we have done, but trust that what we have thus said will induce reflection as the forerunner of action on the part of Councils. Without urging the claims of any other candidate, however, we are constrained to express the conviction that Mr. BIRKENBINE's re-election will be tantamount to a public calamity. 297

THOMAS HERBERT also leaves a family of a wife and two children to mourn his loss. He lived in Palmer street below Belgrade, with Mr. WILLIAM SCOTT, also an employé in the same establishment.

The feelings of these wives and mothers, when, instead of meeting as usual their husbands after their weary toils for the day were over, and welcoming them to that comfortable Saturday night meal, which was the fruits of hard toil and industry, they hear of the awful explosion, and not finding their loved ones at home at the usual hour, hurry to the scene of the disaster, to find that they are either dead or in a perilous situation, are more easily imagined by placing ourselves in a similar position than can be described.

The establishment of I. P. MORRIS & Co. is one of the largest in this city, extending, as does, from Richmond street to the Delaware river, but a few squares west of Port Richmond. One singular coincidence, worthy of mention here, is the fact that, while a car, which was filled with passengers, and passing at the time, received a shower of bricks and other material, neither the car nor the inmates sustained any injury. The manner in which the steam is conveyed to the engine in the pattern shop was through a long pipe encased in a long wooden box, a portion of which was destroyed.

No censure can seemingly be attached to the firm or any of the employés for this disaster, either in being negligent or otherwise. The loss the firm have sustained is estimated at $10,000. The Coroner will be on the grounds this morning, at 10 o'clock, to hold an inquest, and examine into the state of affairs, as far as can be learned, at the time of the explosion,

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THE relative rank of officers in the regular army is designated in the fatigue uniform, worn in accordance with the army regulations, in the following manner:

A Major General is distinguished by two silver stars on his shoulder-straps; a Brigadier General has but one star; a Colonel has a silver embroidered spread eagle; a Lieutenant Colonel has a silver embroidered leaf; a Major has a gold embroidered leaf; a Captain is known by two gold embroidered bars; a First Lieutenant has but one gold bar on the strap; a Second Lieutenant none at all. The cloth of the strap is as follows: Staff Officers, dark blue; Artillery, scarlet; Infantry, light (or sky) blue; Riflemen, medium (or emerald) green; Cavalry, orange color.

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where they lay.

AUNT SALLY.—"*Will you please inform me how I can distinguish the different commissioned and non-commissioned officers of a company and regiment by the peculiar marks upon their arms or shoulders?*" ..... *A Major General wears two silver stars on the strap; a Brigadier, one; a Colonel, an embroidered silver eagle; a Lieutenant Colonel, two silver leaves; a Major, two leaves in gold, one at each end of the strap; a Captain, two gold bars at each end of the strap; a First Lieutenant, one bar at each end; a Second Lieutenant, a plain strap bordered with gold, but no bars; a First Sergeant wears a chevron of three stripes, and a diamond above, on the arm of his coat, and a stripe or cord down the legs of his trousers; Second, Third and Fourth Sergeants, a chevron of three stripes without a diamond, and the cord on the sides of the trousers; First, Second and Third Corporals, chevrons of two stripes on the coat sleeves, no stripes on the trousers. The designated color of artillery is red; light infantry, light blue; cavalry, orange; rifles, green. Officers of the various arms wear sashes of these colors. A Surgeon's sash is green all over the world*

Weather Statistics.—The following weather statistics were prepared by Dr. Conrad, of the Pennsylvania Hospital. The annexed table shows the highest, lowest and mean temperatures of each month of 1859: 322

	H.	L.	M.		H.	L.	M.
Jan.	62	3 b. z.	31	July,	94	55	75
Feb.	60	19	36 9	Aug.	92	54	73.4
March,	68	21	48.3	Sept.	80	49	66.2
April,	76	33	50.8	Oct	80	32	52.6
May,	86	45	63 8	Nov.	67	28	47.5
June,	91	42	69.1	Dec.	71	10	32 8

The mean temperature for the year is 51.2, which is one degree higher than the average of the preceding 35 years The warmest day of the year was the 13th of July, the mean temperature of which was 86 degrees; the coldest was the 10th of January, the mean of which was 2 degrees.

Mean, highest and lowest temperature of each month for 35 years:

	M.	W.	C.		M.	W.	C.
Jan.	31¾	37	22¼	July,	76	79¼	72
Feb.	32¾	42	23	Aug	73	77	66
March,	41¼	48¼	30¼	Sept.	65¾	70¾	60
April,	51¾	56¾	45¾	Oct.	54¾	60	47
May,	63¾	72	58	Nov.	44	51¼	38¼
June,	71½	77	65	Dec.	34¾	43¼	25

The temperature of the seasons, as deduced from observations for 35 years, is as follows:

Winter,	33 degrees.	Summer,	73¼ degrees.
Spring,	51¾ "	Autumn,	54¾ "

Amount of rain for each month of 1859:

January,	6.675 inches	July,	4.071 inches.
February,	3.661 "	August,	4.736 "
March,	6.985 "	September,	7.681 "
April,	5.610 "	October,	3 132 "
May,	2.250 "	November,	3.820 "
June,	6.013 "	December,	3.490 "

Whole amount for the year, 58 12 inches.

This is the greatest amount of rain ever known to have fallen at Philadelpia in a year; the least quantity was in 1825, 29¼ inches. The average for 22 years is 44¼ inches

Amount of rain for each year from 1838 to 1859, inclusive:

1838	45.29 inches.	1849	42.09 inches.
1839	43.73 "	1850	54.54 "
1840	47 40 "	1851	35 50 "
1841	55.50 "	1852	45.74 "
1842	48.53 "	1853	40.63 "
1843	46.91 "	1854	40 18 "
1844	40.77 "	1855	44 09 "
1845	40.00 "	1856	33 93 "
1846	44.38 "	1857	48 28 "
1847	45 09 "	1858	40.45 "
1848	35 00 "	1859	58 12 "

The greatest amount that fell in any month of these years was 11 80 inches in July, 1842, and the least was in September, 1846, ¼ of an inch

SHORT SUPPLY OF WATER.

The request made in another column by Chief Engineer Graff is of interest to the entire community. We learn from this very efficient officer that during the whole of the past month the water in the Schuylkill has been unprecedentedly low, and is still decreasing in volume. The exigencies of the Schuylkill Navigation Company, who claim the prior right to the water by the terms of their charter, require the stoppage of all the wheels at Fairmount for a portion of every day. This, with the enormous consumption of water at this season of the year, has taxed the works to their utmost.

It is now difficult to keep up the supply even with all the available power in operation. Of course, when a part of the day is lost by reason of the unavoidable stoppage, this becomes very serious. Some of the reservoirs are now so very low as to place the city in danger should large fires take place farther removed from the Delaware river than the one at the Patterson stores. When that fire commenced there was less than four feet of water in the Fairmount reservoirs; but fortunately much of the water used was pumped by the fire engines from the river, thus affording an opportunity to draw from other reservoirs.

Under these circumstances it behoves every housekeeper to economize in the use of water, and none but the excessively careless will refuse to obey the suggestions given by the Chief Engineer.

Of course the chief and his assistants will themselves exercise great vigilance so that the necessary water may be had in the event of fires, and they only ask the citizens to enable them to hoard the water for emergencies, by abstaining from wasting it.

A circular has been addressed to the various fire companies, enjoining them to refrain from the practice of sprinkling streets, and in every way to avoid the inordinate use of fire plugs. We presume the presidents of these companies will issue the necessary instructions, but there are other persons, sometimes idle boys, who delight in setting fire plugs running. The police will doubtless attend to characters of this kind and have the penalty in such cases promptly imposed.

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by a pile of boards falling on him, on Christian street wharf.

The Water Department.—The following statement exhibits the receipts and expenditures of the Water Works belonging to the city of Philadelphia, during the past four years:—

	Receipts.	Expenses.	Revenue.
1855,	$382,036 72	$250,895 37	$131,141 35
1856,	351,936 49	138,954 85	212,981 64
1857,	425,426 11	200,605 82	225,820 29
1858,	460,159 56	173,496 61	286,662 95
	$1,619,558 88	763,952 65	856,606 23

An Imposter.—An individual has waited upon several citizens in the vicinity of Tenth and Pine

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The Water Works of Philadelphia.—We give below a table showing the total quantity of water pumped each month, during the year 1858, by all the works belonging to the city:

	Total Quantity Pumped each Month during the Year. *Wine Gallons.*	Average Quantity Pumped per Day each Month. *Wine Gallons.*
January,	468,813,703	15,123,022
February,	379,580,100	13,556,432
March,	470,333,332	15,172,043
April,	574,484,760	19,149,492
May,	550,246,559	17,749,889
June,	681,710,529	22,723,684
July,	752,081,590	24,260,690
August,	681,138,833	21,972,220
September,	681,536,824	22,717,894
October,	622,085,830	20,067,284
November,	513,786,142	17,126,204
December,	463,627,757	14,955,734

Total, 6,839,425,979 gallons.

Daily average, 18,738,153 gallons.

Commerce of Philadelphia.—We give below a table exhibiting the number of foreign and coastwise vessels that arrived at this port during each month of the year 1858.

West Philadelphia Water Works.—We learn that since the new Chief Engineer of the Water Works entered upon his duties, the residents of West Philadelphia have not had a supply of water one day in three, and that when they have it at all, the quantity is so limited that none but those having bath houses in the cellar can enjoy the luxury of a bath. The trouble, it is said, did not exist under Mr. Burkenbine's predecessor. 31

The Water Department.—The residents of West Philadelphia have long complained because they have not had a sufficient supply of water for ordinary purposes. The Water Works erected on the west bank of the Schuylkill, to supply that section of our consolidated city, have proven to be an utter failure, and, in fact, under the present Department, are going fast to destruction. There is even some fear that the Fairmount Works will go the way of all perishable things, unless some measures be adopted by Councils to obtain the services of scientific men to avoid such a calamity. In many parts of the thickly built-up portions of our city there is a great scarcity of water at times, but bad as this annoyance is, it is nothing to compare with that with which our neighbors west of the Schuylkill are afflicted. In regard to the construction of the Twenty-fourth Ward Works, a former Engineer of the Water Department communicates as follows to the Councils in his annual report:—"The distributing main is extended up in the stand pipe one hundred feet, leaving but thirty feet for storage. *This I consider altogether wrong;* the pumping main should have been carried up in the stand-pipe, and not the distributing main. By this plan there would have been a much greater amount of storage, and the same even load would still have been placed upon the engines. Sunday Atlas Nov 7. 1858

As at present constructed the whole amount of storage subject to be drawn off the distributing main, is less than five thousand gallons."

The report concludes as follows: "These works have required considerable repairs and attention during the last season, owing *to faults in the workmanship and construction*, and they will probably require considerable more the coming season, as many parts of them have been *put up so slightly* as *not to be relied upon.*"

We well remember that, when the works were reported as completed, Messrs. Birkinbine & Trotter, the builders, gave a grand feed in the engine house, to members of Councils at that time. Speeches were made by distinguished men; the whole party were "champaigned" with Heidsick, and "smoked" with Principes and regalias, and the works were of course at once considered very useful and decidedly ornamental. Time, with its "sober second thought," has brought the stern reality that the works were not put up right, and that the workmanship in many parts was put up so slightly as not to be relied upon. Such is the language of an eminent and experienced engineer. The present City Councils, in our opinion, and they entertain the same opinion now, did a very unwise act, in selecting one of the firm of builders of the Twenty-fourth Ward Works as the Chief Engineer in the Department. We have even heard some of them censured for so doing, but when all the facts connected with that election are made known the public will look upon them more with pity than with anger. The double-dealing that was practised by one, now in the Department, at the expense, to a considerable extent, of Mayor Henry, is well known to us, and we shall take pleasure at a future time in enlightening the community by detailing the facts. At the present time, we apprehend, the good people of West Philadelphia will have to want for a supply of water until a radical change is made in the Water Department, which will surely take place at the expiration of the term of the present incumbent, and probably sooner. There are entirely too many leaks in the Department, which must be stopped. We shall refer to this subject again. 16

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water is due to the resistance the water meets in entering the basin. As it has to displace its bulk and keep in motion a large portion of the water in the basin, sounder engineering and common sense would point out that the slight resistance from a few more feet of pipe to reach the top of the water would be more than compensated by letting the outlet be slightly above the surface of the water in the basin, and *flow over* instead of forcing its way through the mass of water. If this view is correct, the expense of this stand-pipe and its enclosure, with the sliding gates, would have been saved as well as a per centage of power. 24 LOCOMOTIVE.

The Water Works of Philadelphia.—We gave, on Saturday, the total amount of water pumped at the works in Philadelphia, and to-day we present the detailed operations of each of the works belonging to the city.

FAIRMOUNT WORKS.

	Total Quantity Pumped each Month during the Year. *Wine Gallons.*	Average Quantity Pumped per Day each Month. *Wine Gallons.*
January,	224,267,755	7,234,443
February,	166,994,220	5,964,079
March,	222,547,810	7,178,961
April,	261,441,820	8,714,727
May,	261,558,573	8,437,373
June,	347,559,469	11,585,315
July,	366,997,070	11,838,615
August,	303,795,305	9,799,848
September,	276,821,730	9,227,391
October,	249,269,420	8,040,949
November,	199,142,750	6,638,091
December,	178,022,745	5,742,669

Total, 3,058,418,667 gallons.

Daily average, 8,379,229 gallons.

These works supply the First, Second, Third, Fourth, Fifth, Sixth, Seventh, Eighth, Ninth and Tenth Wards of the city.

SCHUYLKILL WORKS (SPRING GARDEN).

	Total Quantity Pumped each Month during the Year. *Wine Gallons.*	Average Quantity Pumped per Day each Month. *Wine Gallons.*
January,	184,123,310	5,939,461
February,	170,456,280	6,087,724
March,	176,614,360	5,697,237
April,	242,527,570	8,084,252
May,	214,190,470	6,909,370
June,	239,988,870	7,999,629
July,	286,495,830	9,241,800
August,	281,144,580	9,069,180
September,	307,919,810	10,263,993
October,	276,372,900	8,915,254
November,	233,923,080	7,797,436
December,	205,884,932	6,641,449

Total, 2,819,641,992 gallons.

Daily average, 7,725,044 gallons.

These works supply the Eleventh, Twelfth, Thirteenth, Fourteenth, Fifteenth and Twentieth Wards of the city.

DELAWARE WORKS, KENSINGTON.

	Total Quantity Pumped each Month during the Year. *Wine Gallons.*	Average Quantity Pumped per Day each Month. *Wine Gallons.*
January,	50,389,360	1,625,463
February,	32,739,000	1,169,250
March,	60,161,976	1,940,708
April,	60,041,422	2,001,380
May,	62,652,576	2,021,050
June,	76,998,824	2,566,627
July,	79,838,980	2,575,451
August,	81,649,028	2,633,839
September,	66,770,010	2,225,667
October,	66,355,050	2,140,485
November,	60,659,202	2,021,937
December,	58,932,262	1,901,040

Total, 757,187,690 gallons.

Daily Average, 2,074,486 gallons.

These Works supply the Sixteenth, Seventeenth, Eighteenth, Nineteenth, and part of the Twenty-third Wards of the city.

TWENTY-FOURTH WARD WORKS.

	Total Quantity Pumped each Month during the Year. *Wine Gallons.*	Average Quantity Pumped per Day each Month. *Wine Gallons.*
January,	10,033,278	323,654
February,	9,390,600	335,378
March,	11,009,186	355,135
April,	10,473,950	349,131
May,	11,844,940	382,095
June,	17,163,366	572,112
July,	18,749,710	604,829
August,	14,549,920	469,352
September,	30,025,292	1,000,843
October,	30,088,460	970,496
November,	20,061,104	668,703
December,	20,717,818	670,574

Total, 204,177,624 gallons.

Daily Average, 559,390 gallons.

For the supply of the Twenty-fourth Ward.

Statistics of the Philadelphia Gas Works.—We give below some interesting statistics, showing the operations of the Philadelphia Gas Works for the year 1858:

Whole quantity of gas made during the year,	cubic feet,	480,459,000
Maximum daily consumption,	"	2,368,000
Whole length of street mains, miles,		255
" No. of services and meters, feet,		28,965
" No. of lights supplied with gas,		388,000

The City Gas Trust now embraces the pipes and works of the old city, the former districts of Spring Garden and Penn, and Moyamensing, the late Boroughs of West Philadelphia and Frankford, and those of the gas companies of Germantown, Richmond and Southwark; leaving outside only the works and pipes belonging to the Northern Liberties and Manyunk gas companies. The latter is expected to be placed in the Trust in April next.

Commercial Statistics.—The following table ex-

The Free Use of the Schuylkill Water.—The free use of the Schuylkill water during the summer months—especially on Saturdays, when there is an extra amount of house cleaning—almost entirely cuts off the supply from the lower section, and for several hours scarcely enough can be obtained for ordinary use. There is little doubt that much is wasted. Those who have witnessed its liberal application by housemaids to the fronts of dwellings and seen it running from pipes and hose for hours at a time, must have been well satisfied of this. Its waste should, if possible, be prevented; and, if not, an increased supply will have to be provided for. As far back as 1823, in a report of the watering committee, at which time there were three water-wheels and pumps, the amount of water raised being four millions of gallons in twenty-four hours, it was stated as the opinion of Mr. Graeff, that, with five new wheels and pumps, the quantity could be increased to ten millions of gallons in twenty-four hours, the water-power being sufficient to raise even more, if required. There are now eight wheels and pumps in operation, and, with the ten millions of gallons furnished every twenty-four hours, the supply is inadequate, unless the waste be stopped. In 1850, the average amount of water required for twenty-four hours' consumption during the months of June and July, was 6,247,200 gallons. Since then there has been a rapid growth of the city southward, and an additional quantity of water required for culinary and manufacturing purposes. The built up portion of the city southward did not, in 1850, extend below Wharton street; now it is compactly built nearly half a mile below. It is evident that ere long an additional supply of water will be required. The present is believed to be sufficient, if the waste were prevented.

June 9/58

The Water Department.—The residents of West Philadelphia have long complained because they have not had a sufficient supply of water for ordinary purposes. The Water Works erected on the west bank of the Schuylkill, to supply that section of our consolidated city, have proven to be an utter failure, and, in fact, under the present Department, are going fast to destruction. There is even some fear that the Fairmount Works will go the way of all perishable things, unless some measures be adopted by Councils to obtain the services of scientific men to avoid such a calamity. In many parts of the thickly built-up portions of our city there is a great scarcity of water at times, but bad as this annoyance is, it is nothing to compare with that with which our neighbors west of the Schuylkill are afflicted. In regard to the construction of the Twenty-fourth Ward Works, a former Engineer of the Water Department communicates as follows to the Councils in his annual report:—"The distributing main is extended up in the stand pipe one hundred feet, leaving but thirty feet for storage. *This I consider altogether wrong;* the pumping main should have been carried up in the stand-pipe, and not the distributing main. By this plan there would have been a much greater amount of storage, and the same even load would still have been placed upon the engines.

As at present constructed the whole amount of storage subject to be drawn off the distributing main, is less than five thousand gallons."

The report concludes as follows: "These works have required considerable repairs and attention during the last season, owing *to faults in the workmanship and construction*, and they will probably require considerable more the coming season, as many parts of them have been *put up so slightly* as *not to be relied upon.*"

We well remember that, when the works were reported as completed, Messrs. Birkinbine & Trotter, the builders, gave a grand feed in the engine house, to members of Councils at that time. Speeches were made by distinguished men; the whole party were "champaigned" with Heidsick, and "smoked" with Principes and regalias, and the works were of course at once considered very useful and decidedly ornamental. Time, with its "sober second thought," has brought the stern reality that the works were not put up right, and that the workmanship in many parts was put up so slightly as not to be relied upon. Such is the language of an eminent and experienced engineer. The present City Councils, in our opinion, and they entertain the same opinion now, did a very unwise act, in selecting one of the firm of builders of the Twenty-fourth Ward Works as the Chief Engineer in the Department. We have even heard some of them censured for so doing, but when all the facts connected with that election are made known the public will look upon them more with pity than with anger. The double-dealing that was practised by one, now in the Department, at the expense, to a considerable extent, of Mayor Henry, is well known to us, and we shall take pleasure at a future time in enlightening the community by detailing the facts. At the present time, we apprehend, the good people of West Philadelphia will have to want for a supply of water until a radical change is made in the Water Department, which will surely take place at the expiration of the term of the present incumbent, and probably sooner. There are entirely too many leaks in the Department, which must be stopped. We shall refer to this subject again.

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ficient money was not appropriated for the purpose.

The motion to postpone was lost, and the resolution as amended was adopted.

The resolution from Select Council, instructing the Finance Committee to report an ordinance creating a loan of $221,500, for the extension of the Water Works, was taken up, and a long discussion ensued upon the inadequacy of the present works to supply the city with water, and the necessity of seeking for some other source. It was contended that this loan would enable the Chief Engineer of the Water Department to have the reservoirs raised so as to store a sufficient quantity to supply the city at all times, and also to lay a new main from Fairmount to Prime street, which would supply the lower section of the city, without taking the water from the old city proper.

Mr. Mascher said he had been informed, by an ex-Chief Engineer, that in a few years the Schuylkill would not give an adequate supply.

No quorum being present, chamber adjourned.

Fatal Accident on the Market Street Freight

Referred to the Committee on Claims.

A lengthy communication from the Chief Engineer of the Water Department was presented. It gives the present condition of the department. The balance of the appropriation made to this department unexpended is $32,968 91. This amount is considered by the Chief entirely inadequate to meet the ordinary expenses of the year, particularly as the stock on hand is very light or entirely exhausted in everything but 4 inch and 6 inch pipe, of which there is probably enough to meet the demands of the year. He states that, at the Fairmount works, 16 of the flume gates require a renewal; the safety of the works in time of freshets depends very much on these gates, and they are now in an unsafe condition, having been in use for 18 or 20 years. They are very much decayed. At the head gates there are also some repairs necessary, as in their present condition they cannot be raised or lowered. These repairs require immediate attention. At the Schuylkill works the Cornish engine requires immediate attention. A new foot-valve seat was made and the discharge valve turned and fitted at an expense of $328 29. It is now in good working order, as are engines Nos. 2 and 3. No. 1 is not in a fit condition to run, and will require considerable repairs, particularly in the pump. Both the engines at the Twenty fourth ward works require repairs. The guard-valve on the ascending main has bursted and is in a leaking condition, about one-fifth of the water pumped being wasted. This requires attention as the works may fail at any moment and leave the district without water.

The new reservoir on Poplar street is leaky, and but little over one half of its capacity can be used at the present time.

At the Delaware works both of the pumps have bursted and engine No. 2 requires considerable repairs.

An additional appropriation of $17,557 13 is required to make the above repairs.

Accompanying the communication from the Chief Engineer of the Water Department, was the following from Mr. W. J. P. White, Register of Water:

PHILADELPHIA, Aug. 10, 1858.

H. P. M. Berkenbine, Esq.—Sir: I beg leave to call your attention at this early day to the importance of making a complete re-assessment of that portion of the city supplied with water from the several works under your charge. The attention of the Committee on Water has, I am informed, been called to the subject by the report of Wm. Bonsall, Esq., late Register, made in January last. The ordinance for re-numbering the houses having become a law, great difficulty daily occurs in assignating the particular premises which are delinquent in the payment of water rents, and in cases where a change has occurred in the ownership of property, or where it is under the charge of agents, it is almost impossible to apply the remedy of shutting off the water, as required by law. It is, therefore, highly necessary and important that an entire re-registration and re-assessment should be made immediately, so that the duplicates can be prepared for use by January 1st, 1859; and I have no doubt that the whole cost of registry and re-assessment would not amount to more than $3,000, while it would increase the revenue received from water rents from $30,000 to $40,000. Referred to the Committee on Water Works.

A voluminous document was received from the Chief Water Engineer, exhibiting, in detail, the present condition of that department. We find from it that the balance of the appropriation as yet unexpended is $32,958·91, an amount entirely insufficient to meet the current expenses of the year. This, says the chief, is more especially the case, as the stock on hand is very light, if not entirely exhausted, of all materials excepting four inch and six inch pipe. Of this there is probably sufficient to last during the balance of the year. At Fairmount important repairs are necessary. Sixteen of the flume gates must be renewed, the safety of the works in times of freshets rendering their security imperative. They have now been in use twenty years, and have decayed very badly. Repairs at the head gates are also necessary. At present they can neither be raised or lowered.—The Cornish engine at the Schuylkill works also required immediate attention, and a new foot valve seat was made for it. Both are now in first rate condition. The reservoir in Poplar street is leaking, and will retain but half its capacity of water. The embankment of this reservoir, notwithstanding the amount of money appropriated, has received no attention for several years. At the Delaware works both of the pumps had burst, and engine No. 2 is useless for want of repairs. An additional appropriation of $17,557·13 is necessary to rectify the latter evil.

Accompanying the above document, we find from Mr. W. J. P. White, Register of Water, the following:—

H. P. M. Birkinbine, Esq.—I beg leave to call your attention, at this early day, to the importance of making a complete measurement of that part of the city supplied with water from the several works under your charge. The attention of the Committee on Water has, I am informed, been called to this subject by the report of William Bonsall, late Register, made in January last. The ordinance for renumbering the houses having become a law, great difficulty daily occurs in designating the particular premises which are delinquent in the payment of water rents; and in cases where a change has occurred in the ownership of property, or where it is under the charge of agents, it is almost impossible to apply the remedy of shutting off the water, as required by law. It is, therefore, highly necessary and important that an entire new regulation or re-assessment should be made, so that duplicates can be prepared for use by January 1, 1859; and I have no doubt that the whole cost of registration and re-assessment could be made without incurring an expense beyond $5000, while it would increase the revenue of the department thirty or forty thousand dollars.

Very respectfully, W. J. P. WHITE.

Referred to the Committee on Water Works.

[For the Public Ledger.]

The Scarcity of Water—Where the Defect Lies.

MESSRS. EDITORS:—At the present time the public mind is much exercised about the scarcity of water in the city, and it may not be amiss to say a word on that subject and its cause. I am free to confess that absence, for a stated period, from this my native city, enables me to see many evidences of a want of progress for the last twenty years. For instance, the continued hostility, almost up to the present time, to passenger railroads; the same abortion of an ice boat for the Delaware river; no bridges on the Schuylkill river, between Market street and Gray's ferry; half-cleaned streets; the unfinished state of the fountain in Franklin Square, &c. And last, though not least, the want of improvement in pumps, those at Fairmount having been so long considered perfect, (and, compared with some others since erected, they may be deemed so,) that it will appear to many like sacrilege to say anything to the contrary; yet I know that they are not perfect, and lose entirely too large a per centage of water, through their defective arrangement.

All the faults, with one exception, of those first made, are continued down to the present time; in truth one is a fac simile of the other—valve chambers, abrupt curves of delivery pipes, unprotected piston rods, and the very imperfect connection of the air vessels to the pipes leading to the ascending mains, &c.

The ridiculously small air vessels on the two pumps nearest the dam, which have been suffered to remain so for twenty years, is good proof of the want of progress; it is true that the air vessel on the pump driven by the turbine (1851) gives some show of the light dawning; but even this is not one half its proper capacity, and loses much of the utility due to its increased size by its imperfect attachment to the water pipe. So far as workmanship is concerned, those last erected are unexceptionable, and be it here understood that I only object to the arrangement of the pump proper, as it is well known that contractors must conform to the drawings furnished them, and, through the mistaken notion that the first made were perfection, all are alike, except a slight improvement in the valves, and some increase of stroke, and of this the longest (six feet) is entirely too short.

When the wheels are doing their best, the defective working of these pumps can be seen in the basin when the water is low, or by applying the ear to the ascending main; non professional persons have only to look at the variations (four feet) in the height of the jet issuing from the female figure, receiving its supply of water from the descending main, to detect the faulty working of the pump.

Now, Messrs. Editors, I wish to put it on record, that with the same wheels (and speed of run) as motive power, with improvements which could have been made in the pumps, over thirty per cent. more water could be put in the basins than is now done by the pumps at Fairmount, and this without any increase of wear and tear.

This is no idle assertion, for I speak understandingly of the subject. If improvement has not taken place heretofore in the machinery, we may not expect to see much change for the better, now that political availability becomes the test for an engineer, for we all know from experience that political friends will have the erecting of new, or altering of old machinery; and the making of the most money out of the job, instead of the most perfect pump, will be the rule.

The foolish idea that no further improvement can be made, accounts for the many poor pumps about Philadelphia, many resting satisfied that a pump of a given capacity is discharging its proper quantum of water into the basin, whether it does so or not.

The present scarcity of water will be used as a lever to have new works erected; but would it not be better, and more economical, to improve those which we have, at a tythe of the expense, than to perpetuate more defective machinery. After an improvement is made at the "fountain head," then extend from the basin additional supply pipes, without their having any connection with the present street pipes, until they reach certain distant points, where it is known that a scarcity of water prevails, there to be attached to the old distributing pipes, and thus equalizing the supply to all. Carry out these suggestions, and the necessity for new works will be postponed for twenty years.

Next to a better supply of water comes the use of it in extinguishing fires, and I should like to have pointed out any improvement in the pump of the fire engines from the days of Pat Lyon down to the last steam fire engine. Much tinsel and gew-gaws have been elaborated on the outside of "der masheen," but all the defects of the pump and its appendages are continued, as can be seen by the stream of water issuing from the branch pipe.

A few days since, your reporter, in speaking of a new fire engine, particularizes the folding breaks, and their striking on rubber blocks, as if these were new. I claim to be the original inventor of both, and they were introduced on a side lever engine, built from my plans, at New Orleans, La., in the

A. C. JONES

LOCAL AFFAIRS.

The Water Works.—The new Chief Engineer of the Water Works has nearly organized his Department by making all the appointments within his gift, and he will now turn his attention to the necessity of affording the citizens an ample supply of water. One of the chief difficulties in the way, in the estimation of the present Chief, is a want of more power and pumps, as well as larger mains, through which the water is to be distributed. The consumption of water during very hot weather, the time when complaints grow the loudest, amounts to about 30,000,000 of ale gallons per day, while all the works are not capable of supplying more than 25,000,000 gallons per day; so that if there is a succession of very hot days, there must be a falling off in portions of the city remote from the works. The Chief thinks, that, with the enlargement of some of the mains, and the erection of another engine and pump at Fairmount or the Spring Garden Works, the difficulty could be obviated for some years to come. The water duplicate has increased about $15,000 per annum since consolidation, and there has not been a corresponding increase in the capacity of the works. A great deal of water is now wasted by the indiscriminate opening of fire plugs by firemen and others. No one has any authority for thus using the water except an officer, or person deputized by the Department. Where notification is left at the office that a plug should be opened for the cleansing of gutters, &c., an officer will be sent to attend to the duty.

The Amended Census of the Eighth Ward.

Election Divisions.	No. of Inhabitants on Nov. 10.	No. of Inhabitants on June 1.	No. of Occupied Dwellings.*	No. of Taxables.	No. of Registered Voters.	Vote in Oct., 1870.	No. of Inhabitants to each Dwelling.*	No. of Inhabitants to each vote.
First	1006	980	115	222	212	165	6.6	6.1
Second	1321	1292	179	298	295	162	7.4	8.12
Third	1845	1769	273	431	415	268	6.75	6.8
Fourth	2217	2149	332	453	434	263	6.2	8.4
Fifth	2968	2969	384	553	547	371	7.4	8
Sixth	2256	2210	322	433	426	264	7	8.5
Seventh	2234	2193	319	508	505	319	7	7
Eighth	3442	3422	518	559	545	361	6.66	9.5
Ninth	1832	1833	315	298	298	182	6	10
Tenth	3710	3569	535	695	681	405	6.9	9.1
Totals	22,831	22,376	3292	4450	4358	2760	7	8.25

A comparison of the above figures with those returned by the United States Marshal gives the following:

Population of Eighth ward by United States census in June	20,366
Increase shown by this canvass for June	2,010
Increase shown by this canvass for November 10	2,465
Increase in the whole city by the proportion established for June 1, 10 per cent.	65,719
Increase in the whole city by the proportion established for November 10, 12½ per cent.	82,147
Applying the proportion to each dwelling to the whole number of dwellings in the city, as by assessors' return, viz., 115,132 dwellings, 7 persons each, the population is calculated at	805,924
The census of June, viz., 657,195, with 12½ per cent. added, is	739,342
The official return of taxables for the whole city in 1870 was 149,243; applying the proportion found in the Eighth ward, viz., 5⅛, the total population would be	764,870

The committee of Councils, in their report, say:

We feel confident that the aggregate we have obtained for November 10 is almost absolutely correct, while that for June 1 is only short of the true return for the reasons just stated. The difficulty experienced by our canvassers was often great, and we can well understand that the United States deputy marshals, poorly paid as they were, could excuse themselves for not making returns in the more difficult cases. But none have been recorded in this enumeration who were not known to be residents at the time named, so that the real population was greater by the amount of so many floating residents, at least, as scarcely have fixed residences in families. It is also proper to say that students, as well as all strangers, travellers, and persons belonging elsewhere, have been carefully excluded from our enumeration. We have identified hundreds of persons omitted from the United States census for June; the greater number being of absent families, but many being servants, residents at hotels, etc.

We have reason to believe that the census of manufacturers, as originally taken by the United States deputy marshals, is quite inaccurate, and far short of a complete return. To our personal knowledge, instances of the omission of very large establishments have occurred. A vigorous effort should be made to obtain the proper information, and to secure its incorporation in the official returns of the census.

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highest vote.

Mayor—ALEXANDER HENRY.
City Solicitor—HENRY T. KING.
City Controller—GEORGE W. HUFTY.
Receiver of Taxes—ARMSTRONG I. FLOMERFELT.
City Commissioner—EDWARD R. WILLIAMS.

LIST OF THE NEW SELECT COUNCIL.

Wards.
1. Stephen Benton, D.
2. *Oscar Thompson, Op.
3. *T. P. Norman, D.
4. *J. K. Loughlin, D.
5. G. M. Wharton, D.
6. *O. H. P. Parker, Op.
7. William Bradford, D.
8. *Theodore Cuyler, D.
9. W. B. Foster, Jr., D.
10. *John M. Ford, Op.
11. D. S. Beideman, D.
12. *S. S. Leidy, Op.

Wards.
13. William Neal, Op.
14. *O. P. Cornman, Op.
15. *Henry Davis, Op.
16. *George Reed, Op.
17. W. O. Kline, D.
18. *J. H. Bringhurst, Op.
19. G. W. Scofield, D.
20. *James Peters, Op.
21. Nathan Nathans, D.
22. *Arch. McIntyre, Op.
23. William Horrocks, D.
24. *D. C. Enos, Op.

*New members.
12 Democrats to 12 Opposition.

LIST OF THE NEW COMMON COUNCIL.

Wards.
1. John Krider, Op.
 Amos Carson, "
 C. C. Server, "
 Fredk. Simon, "
2. Joseph Megary, Dem.
 Wm. C. Kelley, "
 R. V. Brennan, "
 T. Manderfield, "
 G. B. Miller, Op.
3. John Thompson, "
 Frank. McIlvain, Dem.
 Nicholas Walsh, "
4. Alfred Day, "
 David McClean, "
 John G. Shoch, "
 C. McDonough, "
5. Wm M. Baird, "
 James McCann, "
 C. S. Wright, "
6. P. B. Mingle, Op.
 Saml. C. Cooper, "
 Osborn Conrad, "
7. Peter Robb, Sr., "
 Chas. Harbert, "
 Lewis S. Heins, "
 Joseph Shermer, "
8. A. J. Hodgdon, "
 Robert Luther, "
 Wm. H. French, "
9. J. P. Wetherill, "
 Saml. H. Case, "
 Chas. A. Rubicam, "
10. Robert Kelton, "
 A. B. Cooley, "
 Wm. P. Hacker, "
 Wm. L. Dennis, "
11. John F. Mascher, Dem.
 Wilson Kerr, "
 Geo. B. Eplee, "
12. Isaiah P. Fitler, Opp.
 Abraham Nippes, "
 T. W. Steeling, "
13. John Ketchum, "
 Geo. W. Gamble, "
 Jonathan Bulloch, "
 Samuel Andress, "

Wards.
14. Charles B. Trego, Op.
 William Conrad, "
 Jona. H. Pugh, "
 Jacob S. Fish, "
15. Hiram Miller, "
 Thomas Potter, "
 John K. Kersey, "
 R. Hutchinson, "
 Geo. F. Gordon, "
16. M. H. Dickinson, "
 Thomas C. Swain, "
 Solomon Wagner, "
 W. J. Gillingham, "
17. Charles Wright, "
 James Irwin, "
 Thomas Chandler, "
 William Hogg, "
18. Benj. H. Brown, "
 Jacob Moyer, "
 Richard Wildey, "
 Ahab Hunter, "
19. J. H. Rothermel, "
 John Derr, "
 Joseph Roats, "
 E. P. Morris, "
 James House, "
20. Jos. Manuel, Jr., "
 Nathan W. Ellis, "
 Myers C. Fisher, "
 Geo. W. Simons, "
 James Russell, Dem.
21. Charles T. Jones, Opp.
 John W. Bowker, "
 Adam S. Uber, "
22. W. Rotch Wister, "
 A. C. Harmer, "
 Matthias Haas, "
23. John R. Savage, "
 W. W. Smedley, "
 E. S. Handy, Dem.
 W. B. Comly, Opp.
24. S. W. Cattell, "
 Joseph S. Riley, "
 Jacob K. Knorr, Dem.

Opposition in Common Council 70
Democrats 20

Probable majority for Opposition 50

ALDERMEN.

Wards.

128

PHILADELPHIA, TUESDAY, AUG. 16.

THE BELMONT ENGINE.

Editor EVENING STAR:

I have read with interest the communication of "Chisel" upon the engine at the Belmont water works, which appeared in your issue of the 9th instant, being one of those who feel themselves wronged and aggrieved by the proceedings of the Chief Engineer in contracting for these engines at an exorbitant price, and denying us, who own shops and employ a large number of hands and pay taxes to support the city, an opportunity of competing; at the same time giving to a New York firm $95,000 for what could no doubt have been contracted for and done better in this city for $55,000.

If this engine possesses the advantages, developes the duty, and produces the saving in running expenses claimed for it over all other engines, by the Chief Engineer, then it may be right to pay the contractor the entire contract price, notwithstanding it is about three times the actual value of material and work, at fair shop prices in this city. Yet we demand as citizens and tax payers, that before one cent of this money is paid, these superior advantages be demonstrated, by a fair and impartial test, made by competent and disinterested men.

It is claimed for this city that machinery, particularly heavy work, can be built cheaper and better here than in any other place in the country, by reason of the cheapness of material and skill of our workmen. The course which the Chief Engineer has taken misrepresents our abilities, deprives us of these advantages in the estimate of others, and places our shops in a false light before the country.

We ask for justice at the hands of those who should look after our interests, and of the official who is paid to protect the interests of the city, and not that of any individual here or elsewhere. Are there no members in Council who will demand and secure a fair investigation of this subject?

HAMMER.

Aug 18/58

LOCAL AFFAIRS.

Water! Water!—In various parts of the city, complaints are made by citizens that they are not able to obtain a full supply of water. The grumblers have become so numerous that the Chief Engineer of the Water Department finds his office a difficult and vexatious one, and, so far as we have been able to ascertain, he is making every effort to remedy the great evil. The various works belonging to the city were, it is stated by the present Chief, greatly out of order at the time of his election, and in consequence of there being but little money credited to the item of repairs, he has been unable to progress as rapidly with the improvement of the works as the wants of the citizens demand. There are four engines at the Schuylkill, or Spring Garden Works, one of them being a large Cornish engine, and three of these engines must be kept constantly at work in warm weather to supply the demand of the districts through which the pipes connected with the works are laid. All these engines were partially out of order when the new Chief came into office, and during the time the most urgent repairs were being made but one or two of the engines could be run, thus rendering it impossible to keep up a full supply. The works have now been so far repaired that these engines are kept in constant motion, and thereby the basin is always kept full.

The Fairmount Works, which supply the old city proper and the lower districts with water, are in much better repair. In consequence of the leaking of the large basin, back of the penitentiary, a sufficient supply of water cannot be stored in that section to satisfy the demand made on Saturdays, when the water is more generally and profusely used. This basin is constructed to hold water to the depth of 17 feet, but in consequence of its dilapidated condition, the pumps have to be stopped when water to the depth of 12 feet has been discharged into it, thus depriving the citizens of several millions of gallons of water. This leak in the basin cannot be stopped until Councils make an appropriation for the purpose, the item for repairs in the general appropriation bill having been nearly exhausted. The complaints from the Twenty-fourth Ward have been both loud and frequent of late, in consequence of the fact that during a portion of the day, for some time past, scarcely any water could be obtained.

The supply of water at these works is stored in a stand-pipe, and this holds so small a quantity that if the engines are not kept constantly at work, the supply to citizens is soon exhausted. In consequence of the bursting of the guard valve on the ascending main, and the engines requiring repairs, an adequate supply could not be kept up. The repairs have only been partially made, and until these are completed, a full and ample supply cannot be furnished at all times. The Kensington Works are also in bad order, and incapable of performing work so as to keep up the supply of water demanded by the citizens in warm weather. The pumps connected with the two engines have been bursted for a long while and only kept together by iron bands, so that at each stroke of the piston, a large quantity of water, which should be forced to the basin, is lost through the leaks in the pumps.

The subject of furnishing our citizens with a full supply of water at all seasons of the year is one of great importance, and should demand the immediate attention of the proper authorities; and when the plan, now being prepared by the Chief Engineer of the Water Department, is submitted to Councils, prompt action should be had, if his suggestions are useful and practicable.

Thus far we have considered this question on the broadest business principles. But suppose we take it on narrower ground. If Philadelphians say they will not take a manifestly desirable article, for the declared reason that it is made elsewhere, how long will it be before other people begin to act, in a spirit of retaliation, and refuse to take Philadelphia manufactures on the same ground? Such retaliation will be sure to follow, and as a manufacturing city, we must certainly suffer most. As to the other points in the controversy, it is not necessary to give an opinion. The Worthington pump may or may not be all that is claimed, but before our citizens should encourage Councils to make an official declaration that a good machine has been rejected on the avowed and sole ground that it was not made here, they ought to pause awhile, and reflect on the possible consequences.

In the second view, the insolence of such a course is rendered yet more apparent by the conduct of the New Yorkers subsequent to the excitement raised on the question. The offer made to accept payment in tools, or in any species of trade, and the undue eagerness displayed, all reveal the great anxiety. Such is the anxiety for the gain in the making of this particular engine. It is because the New York firm agree to send advertisements all over the land that the superior merits of their manufactures are recognized by even the jealous city of Philadelphia, who, through her Councils, have ordered from New York the engine which they could not find a firm at home competent to make. The immense influence of such an announcement is apparent. It will do us infinite damage, and do New York infinite good. We hope, therefore, that the little game will be checked; that the Committee of Councils will at once take steps to secure the fair fame and high reputation of the mechanics of Philadelphia. The reputation of our machinists is a deserved one, and no reprobation is too severe for the impolicy which would throw away wilfully the merited high standing of our native city.

Aug 18/58

THE WANT OF WATER.—The public have been complaining of the lack of water sufficient for domestic purposes during this summer, and from present indications their wants in this respect are not likely to be very soon relieved. Either through inattention of those who have had the charge of the Water works, or an unwise economy in Councils, in withholding the necessary means for repairs, the works have got out of order, and are not capable of performing the duty required of them. One basin, that in Spring Garden, is in such a leaky condition, that it will not hold more than two-thirds its actual capacity; beyond that it is useless to pump water into it, for it runs out as fast as it is pumped in. The engines at the works are not in proper order. Some pumps have been bursted, and patched up with iron bands. Such a condition of the public Water-works must have arisen from long continued neglect, and proves that they have not been in very competent hands. The superintendent, of course, is not required to furnish the money to keep the works in repair; but a man thoroughly fitted for the position, would have so pressed the matter upon Councils, that they would have been compelled to take the required action to remedy the evil, however dilatory such bodies may be generally, and however indisposed to expend money for useful purposes. The public have been complaining for the last year or two of a deficiency of water. If the superintendent had explained to the citizens what was the real cause of that deficiency, they would have taken measures to bring Councils to a proper consideration of it, and the inconveniencies by this time would have been remedied. But this was not done. Instead of telling the people the real cause of the deficiency, and having it instantly removed, they have been exhorted not to waste the water, and the aid of the police has been invoked to prevent housekeepers from using what their daily wants require. We hope, now that the superintendancy has gone into other hands, that we may have some relief. The subject should be brought at once to the notice of Councils, and a full statement made of what the works require to furnish a full supply of water at all seasons. Let such a statement be made, and we have no fear that Councils will not supply the means required. Delay in a work of this necessary character, is a wrong to the public and an injury to the city.

[For the Public Ledger.]

The Works at Fairmount—How to Get a Sufficient Supply of Water.

In my last communication, I pointed out some of the objections and made the assertion that the pumps at Fairmount could have been improved so as to put more water in the basin with the same amount of power, and as many may think that it is easier to condemn than to give the modus operandi of a better plan, I will give as much explanation to the general reader as it is possible without the aid of drawings—before doing so I will correct two typographical errors in my last; for "descending main," read *ascending* main—"and speed of run," read speed of rim.

The comparison of my arrangement is to be understood to refer to the *best* pump now at Fairmount, and not to the worst.

1st. Longer stroke; this involves a greater speed of piston. This may startle some who pin their faith on formulas of books founded on imperfect working pumps; nor could those now at Fairmount be worked at the speed of my plan of pump without a great increase of wear and tear.

Those whose experience has been *practical*, will admit that the longer the stroke the more effective the pump, the bore being less, the valves are less, and there is a smaller per centage of loss. Again, a pump of long stroke can be worked with *less* power, and the water is kept at a more regular velocity in the discharge pipes. For example—take the six feet stroke, as it is now at Fairmount, and make another pump of *large diameter*, so as to have the same capacity of chamber to suit a *one foot stroke*, (or less,) and how much water would be put in the basin? Let the piston travel at the same speed as the six feet stroke, and it would not be long before the *shocks* would destroy all.

2. In my improvement, the valves will open and shut quicker, lose less water, and keep in order longer, than the valves in use at Fairmount.

3. Easier access for the water on the receiving side to get into the pump chamber, and air vessels so arranged as to aid the free access.

4 The discharge or delivery pipes to have a *gentle curve*, when compared with the short quarter circles on the present pumps, and this without taking up more horizontal space.

5. A simple method of neutralizing the shock in passing the centres, at the commencement of the stroke.

6. The method of connecting the air vessel to its pipe could not be made intelligible without the aid of a drawing, but I would here remark, that those at Fairmount are like a certain patent trap, in which "it was as hard to get in as it was to get out."

7. Larger air vessels, so that the speed of water will be kept nearly continuous in the "mains," not as at present by a series of pulsations, causing an absence of smoothness, the test of all perfect machinery.

8. A covering of copper or brass to the wrought-iron piston rods, thereby requiring less hard packing in the stuffing-box, and consequently less friction. The necessity of this may be seen in the *wavy wear* of those near the dam, consequent from the want of homogenity of wrought iron.

Of course, in a newspaper article, where space is limited, it is not possible to enter into details; nor could *all* the stroke I would wish (without having too short a connecting-rod) be obtained without removing the wheels further from the "forebay;" as the space now is, there could be from two and a half to three feet more stroke.

The time will come when the small water-wheels will need renewing; then ten feet stroke, or more, may be had by extending the front of the house a few feet nearer the river; and this could be done without marring the present beautiful appearance of the outside

I think I have said enough on the subject to prove that the pumps are susceptible of improvement, and per consequence put more water in the basin.

I hold myself, if it is wished by the Watering Committee of Councils, to furnish plans and specifications, to be submitted to one or more *unprejudiced* practical engineers, to convince them that I can plan an improved working pump that will discharge into the basin from 30 to 50 per cent. more water, according to space in the pump room, than can be done with pumps of the present arrangement.

Yours, A. C. JONES.

THE SUPPLY OF WATER FOR THE CITY.—Every year, during the summer months, there is a great outcry by the citizens of the want of water sufficient for domestic use. The inconvenience arising from this insufficient supply has been great and as the consumption increases with the growth of the city in population, the inconvenience grows more intolerable. Various suggestions have been made with a view to supply the deficiency. The Wissahickon, the Delaware, the Lehigh, have all been named as affording an adequate supply of water, and the wants of the city have been considered a sufficient justification of the expense. But these suggestions have all been founded on the assumption that the present works have not sufficient capacity to supply the city. The Chief Engineer of the Waterworks is of opinion that the works now possessed are capable of enlargement and extension to meet all the present demands of the city. In a report to be presented to Councils, he proposes to supply the old city entirely from the Fairmount works, and the districts from the three reservoirs, Kensington, Spring Garden, and the new reservoir at Corinthian avenue, which he proposes to connect with the Kensington reservoir by a main.

With three turbine wheels and pumps at Fairmount—one to supply the present one and two additional—he can increase the supply of water from twelve millions of gallons per day, the greatest capacity of the present works, the lowest being ten, to sixteen millions of gallons per day for three months in the year, fifteen for two months, twelve for five months, and ten for the remainder of the year, or an average of 13½ millions of gallons per day. By raising the stand pipe at Fairmount ten feet, the new reservoir at Corinthian avenue nine feet, and the Kensington reservoir seven feet, it would bring them all to the same level as that of Spring Garden reservoir. The pumps at Fairmount would then supply the entire city water for at least four months in the year, viz: December, January, February and March. With the assistance of the Cornish engine at the Schuylkill works the supply can readily be kept up for two months (April and November), when it will require the assistance of two more of the engines at the Schuylkill works for May, September and October; and for the remaining three months the assistance of the Kensington works will be required. This arrangement will save a large amount of expense to the city, and simplify the operations of the department, as well as render them much more efficient. The raising of the new reservoir will increase its storage capacity thirteen millions seven hundred and thirty-three thousand three hundred and twenty-five gallons, and the raising of the Kensington reservoir will increase its storage capacity ten million two hundred and seven thousand two hundred and fifty-eight gallons. It will be necessary to connect by mains the new reservoir with the Kensington reservoir. This will enable the department to furnish an ample supply of water to the higher parts of the district through which the main passes, and where the supply is now very deficient for want of a main. These reservoirs being all on one level will mutually assist each other, and render the supply of water much more constant and reliable, and it will place all the distribution north of Vine street under the same head. This arrangement will save nearly nineteen thousand dollars in the running expenses of the two works.

For the supply of the Southern part of the city, a large main or feeder to continue down Broad to Prime street, without being tapped, and then to branch to Tenth and to Fifth streets, would give a sufficient supply to all the city below South street from the new reservoir, with a pressure equal to Fairmount reservoirs, if placed at Broad and Prime streets. By this arrangement the old city would receive its water entirely from Fairmount, and the districts from a system of three reservoirs of equal head, and supplied by Fairmount, Schuylkill and Delaware works, the reservoirs materially enlarged, and sufficient mains to supply the demands at a very large saving in the running expenses.

32

By erecting a stand-pipe at the Kensington Waterworks, the ascending main could be used as a distributing main, and meet the deficiencies felt in that district in mains. By raising the Kensington reservoir seven feet, sufficient additional depth would be obtained to add materially to the purity of the water. For the Twenty-fourth Ward, a reservoir is recommended at the head of the old inclined plane, giving an elevation of two hundred and seventeen feet above the Schuylkill. Frankford can be supplied from the Kensington reservoir. The total cost of these enlargements and extensions is set down at $425,000—the Fairmount and Kensington extensions costing $200,500, the mains for the First District $137,500, the Twenty-fourth Ward $43,100, and Frankford $2000, with $2000 for surveys.

These additions could all be made to meet the requirements of the coming summer, and all the works be finished within two years. Without them, the supply of water will be shorter next year than last. The loss of water, in consequence of the imperfect machinery and leaks, is about twenty per cent. of all the water pumped into the reservoirs, and the demand upon the works is, in some months, four millions of gallons per day greater than they can supply. It is to meet this immediate necessity that the above plan has been suggested. For the future wants of the city, othe sources of supply must be looked to. The report, after objecting to the Wissahikcon, the Delaware above Easton, the Lehigh, and the Schuylkill above Reading, suggests that—

"A source of supply has been overlooked, viz: the system of surface drainage and store reservoirs, which is so successfully carried out in some of the cities of the Old World, particularly Liverpool and Manchester, in England, where an abundant supply of most excellent water has been procured by the above system. That we have as well fitted and as accessible, and in all points as desirable a source of supply as those of either of the above cities, needs but a careful examination to demonstrate. An average supply of say 30 to 50 millions of gallons per day, brought by its own gravity and delivered into the city at an elevation of about 150 feet above tide, by an aqueduct of but from 25 to 30 miles in length, is a possibility which the expenditure of a sum not greater than the above indicated will most probably demonstrate to your entire satisfaction. Such a work looks to the future, but the necessities of the city call for an immediate extension and enlargement of the present works."

The Water Question.

The Chief Engineer of the Water Department has at length promulgated his views in relation to the measures which ought to be taken to supply a sufficient quantity of water for the use of our citizens. A scarcity of the fluid is hardly felt at this time of year, or in the winter; but a want of it is in some portions of the city very embarrassing in summer, and when water is the most wanted. We are not sufficiently scientific to be able to properly understand the merits and demerits of the plan of Mr. Birkenbine, but it *does* seem to be extensive, much more so than us poor simple citizens who are not engineers would have supposed to be necessary. For instance, it is proposed to raise the reservoir at Corinthian avenue nine feet, and the Kensington reservoir ten feet, and to build a new reservoir, size not stated, in West Philadelphia. The stand-pipe at Fairmount ought to be raised ten feet, says Mr. Birkenbine, and a new stand-pipe should be built at the Kensington works. All these improvements being effected, it is proposed to supply the old city proper entirely from the basins at Fairmount, by the Fairmount works. The Corinthian avenue, Spring Garden, and Kensington basins, are to be connected by proper mains, and the water carried by sufficient conduits from those reservoirs to Southwark and Moyamensing. The whole of Kensington, Fairmount, Northern Liberties, Spring Garden, Southwark, Passyunk, and Moyamensing, will then be supplied from the upper works, whilst the city will be furnished with water from Fairmount. West Philadelphia must depend on its own works and the new basin; and Germantown must rely upon the Germantown Water Company. We learn from the report that the Fairmount pumps will, if these alterations are made, be sufficient to supply all the basins during the four winter months, at which time Kensington and Spring Garden need not work two months more, April and November, can be managed by the aid of the Cornish engine at Fairmount; and for the hot months the labors of the Fairmount and Kensington works will be sufficient. We understand from this that it is proposed to put the Spring Garden works out of service, and use the Kensington works instead. This is a matter of regret, as the Delaware water is not as good as the Schuylkill water at any period, and it is especially deleterious in summer. The time necessary to make these alterations is computed at two years, the expense at about half-a-million of dollars. As estimates are not very reliable, the probability is that if the job is undertaken, the cost before it is completed will be three-quarters of a million. This amount will not be grudged by our citizens if they are insured a plentiful supply of the element they pay for. We want enough water to drink, to use for culinary purposes, to bathe in, and to wash our pavements in summer. We want the water to run freely in every house, the moment that faucets are turned. We do not wish to have to wait two hours to get enough water for a bath. We want water, plenty of it, at all times and under all circumstances. If Mr. Birkenbine's plan, extensive as it may appear, will secure us that desideratum, no matter how much it costs, he shall be applauded to the echo, which will applaud again.

—That was a sharp chap who called on Mr. Graeff, the Chief Engineer of the Water Works, last week, to complain of the scarcity of water at his residence. He wandered around the Fairmount works, poking his nose here, there and everywhere, until he reached the summit of the mound, and discovered that the water in the reservoir was very low. This was indeed a discovery. Now he had the secret of the mismanagement, and post haste he went for Mr. Graeff, who happened to be in the neighborhood. Mr. Graeff mildly suggested that repairs to the basin made it necessary to let the water down. Not satisfied with the explanation, our friend continued his rambles, and of course made another discovery—the wheels were not in operation. Back again to Mr. Graeff he went to be met with another explanation that the tide was up, and hence the wheels were stopped. Off again our friend started, and having made a thorough inspection of the works, he returned with the startling announcement:—"The man who designed these works was a d—n fool!" Mr. Graeff "couldn't see it," and calmly and coolly managed to get in the idea that there might be two opinions upon that point. Citizen would admit but one, and that the one he had just given. "But why," said Mr. Graeff. "Because if he had any brains at all he would have placed the dam *below* the works, and then the tide would never have effected the wheels!" Mr. Graeff immediately caved. He had nothing to advance against so wise a proposition, and the citizen left, convinced that the scarcity of water at his home is due to the fact that "a d—n fool" forgot to place the dam below the wheel-house.

SUNDAY DISPATCH.

PHILADELPHIA, JULY 4, 1858.

24

Shall we have Pure Water?

The late trouble with the Delaware Water Works, which supply the district of Kensington, cannot be ascribed to accident. The fault is evidently in the superintendence, or rather in consequence of the want of it. Before Mr. Ogden became Chief Engineer, there were occasional complaints, which were caused by carelessness in the supervision of the works; but under a proper management years elapsed between the periods when there were occasions for remonstrance. Mr. Ogden most certainly has been to blame for the repetition of the imposition of putrid and nasty water upon the inhabitants of the upper districts. Now that he has been removed, we trust that there will be no more occasion for a renewal of the distress, which was caused last week by the filthy state of the water in the Kensington basins. In connection with this subject, it may not be amiss to say that a little attention on the part of Councils and of the Mayor would be eminently serviceable. If it is true that the operations of the cleaners of catfish immediately in the neighborhood of the Delaware Water Works occasion the contamination of the water, it is in the power of the Councils to pass an ordinance to prohibit such labor within a safe distance of Gunner's Run. If the members would pass such an ordinance, and if the Mayor would specially instruct the police officers of that district to vigilantly watch and arrest all violators of the law, the nuisance might be immediately abated. Can we hope for such a happy conjunction of circumstances?

Whilst upon this subject—the purity of the water which we drink—it is in order to call the attention of Councils to a matter which has again and again been pressed upon their predecessors with no success. Are the members aware of the fact that a nasty culvert debouches at the foot of Coates street upon the Schuylkill, and almost in the forebay of the Fairmount works? This dirty sewer was constructed by the Commissioners of the old district of Spring Garden, at a time when the district was quarreling with the city in relation to the right of using the Schuylkill water. It was built with a direct and spiteful determination to injure the water used by the city. It now drains a large portion of the region above Coates street and west of Broad. That such an impure conduit should be allowed to exist after Consolidation, (which was intended to harmonize the existing jealousies of the city and county,) has been very discreditable to Councils. As matters now are, a portion of this filth has, like the ingredients of a poisoned chalice, returned to plague the inventor. The dirty stuff is pumped up now for the delectation of the Spring Gardenites as well as for the people of the old City, Southwark and Moyamensing. How much longer we are to be forced to drink the water thus tainted with impurity, it is a hard thing to predict, such is the apathy of Councils. The remedy is an easy one. A short culvert from Coates street, along William street to Fairmount street, would turn aside this drain and discharge it in the Schuylkill below the basin; an extension of it northward, along the Reading Railroad, would take off the drainings of the lager beer breweries which extend up as far as Fountain Green, and which now find their way into the Schuylkill. This culvert is the most important work which requires the attention of Councils. If it is not convenient to construct it along the whole line of the railroad, the work ought to be immediately authorized which will turn aside the Coates street culvert. We have spoken of this matter two or three times in the last three years; and some action was taken in Councils, but the affair was safely put to sleep under the nursing of a committee. As we have new Councils, new men, and we hope a new policy, *we* do our duty by once more calling attention to this most important subject.

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member of President Grant's Cabinet.

WESTERN MAN.—*The stand pipe of the West Philadelphia Water Works, situate near the Pennsylvania Railroad, and nearly opposite the Mansion House at Fairmount Park, is a contrivance by which it was hoped to increase the head of water distributed to occupants of houses on the west side of the Schuylkill. The water is pumped from the water works to the top of the standpipe, or column, and the pressure from that height was expected to do the business. Substantially, the thing has been a failure. It is one of the scientific triumphs of that eminent engineer, H. P. M. Birkinbine.*

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35

"Sunday Mercury"

3 Sep. 11/70

THE LATE FIRE.

The late extensive fire in the Fourth District fully demonstrates the fact that our city cannot have too many fire apparatuses. the evidence so practically illustrated at the above fire must be convincing proof that it would not do to introduce a handful of steam engines and a paid system, without the due consideration to which it is entitled to. It may be very well for a few to cry for the abolishment of the present volunteer department, while there is no danger. But if it had been abolished some nine months ago, as was proposed in Councils, what would have been the state of affairs in the Fourth District to-day? Why, instead of the fire being stopped where it was, there is not a doubt but it would have swept the river front for at least a mile. It was only that we had fortunately a large number of steamers at our command, and by the sounding of the general alarm which brought them to the scene of disaster, and having plenty of firemen to operate them, and perform other necessary fire service, that the fire was soon under check.

The supply of water was very much felt at the commencement of the fire. The fire plugs in many instances were not worth opening and those that had any water in them were so scant that it was almost impossible for a steamer to give proper force to more than one stream at a time. The river was very low at the time the fire broke out, and the consequence was, our steam engines could not take their own water from the river on account of the mud and low tide.

We have heard some express the opinion that the Chief should have ordered the general alarm to be struck before he did. Now, suppose he had. There was not sufficient water to be had for those that were in service, let alone calling upon more. The tide did not commence to rise until long after the fire broke out; and as the general alarm was not given for some time, those answering its call, upon their arrival proceeded as a general thing to the river, and by that time could take their water from the same.

Can any one inform us how long we are to be at the mercy of an incompetent Chief Engineer of the Water Works? He ignores our mechanics by going to New York for his machinery to pump the water into the reservoirs, and thousands of dollars are spent yearly to increase our water supply, and yet it is just the same state of affairs it was five years ago. Big mains have been put down in various portions of our city, but they have not enough water in them to give a proper supply for domestic use, much less for other numerous purposes which the city receives from our citizens by their annual water taxes. The Chief and the Committees who have the matter in charge have been just twenty-five years finding out that water won't run up hill. For the facilities which our city possess for having a full supply of water, it is one of the worst in the Union, and the sooner our citizens give their attention to the matter, the better.

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agreed to.

The ordinance from Select Council file, relative to the assessment of water rate, was passed finally, as follows:—

A supplement to an ordinance organizing the Department for supplying the City with Water, approved October 3d, 1854.

Section 1. The Select and Common Councils of the City of Philadelphia do ordain, That the Chief Engineer of the Water Department, under the supervision of the Committee on Water Works, is hereby authorized and required to reassess all properties subject to water rates, in the city of Philadelphia, and cause to be made the necessary duplicates for the use of the Register of Water Rents; and for this purpose he is, subject to the supervision aforesaid, authorized and empowered to employ such agent or agents as may be necessary to complete said reassessment, on or before the first day of November, A. D. 1858; and the said agents are authorized and required, to enter all property where the water pipes are laid, to examine the same, and make a full and accurate description of all hydrants, boilers, baths, water closets, sinks, wash paves, and other appliances for the use of water, of whatever kind or character thereon, giving the number of each house, store, shop, and factory, with the purposes for which it may be used, and the name of the street, lane, alley or court where located; and also to note each dwelling house where the water is not introduced, as well as the name of the owner or owners thereof, in a book or books which shall be provided for that purpose, and return said books to the office of the Water Department as fast as the same may be completed. And it shall be the duty of the engineer aforesaid, to cause to be made out such duplicates as will enable the department to assess against each house, houses, or other building so reassessed, a rate of water rent in conformity with the rules, regulations and charges now fixed by the Water Department: Provided, that the whole cost of reassessing and making the duplicates provided for in this ordinance, shall not exceed the sum of three thousand dollars.

Section 2. That hereafter there shall be levied a tax to defray the expenses of the Water Department, to be styled a water tax, against each and every dwelling house or houses situate on any street, lane or alley, court or other place where the water pipe is laid; and as fast as it may be laid along the line of any such property as aforesaid it shall be the duty of the Chief Engineer to assess a rate of tax, of such amount as is now charged against like property where the water is now introduced. And the Register of Water Rents is hereby authorized and directed to collect the same at the time water rents are collected by law, and in the event of any owner or owners of such property neglecting or refusing to pay the same on or before the thirty-first day of September in each year hereafter, the same shall be registered against his or their property, and be collected as other registered taxes are now collected by law.

Section 3. That hereafter no permit shall be issued for the construction of wash paves, except such permit shall contain a proviso that the same shall be constructed so that the water may be checked from the street, and any person who shall construct or cause to be constructed, a wash pave without having a stop-cock that may be used from the street, shall be liable to a penalty of twenty dollars for each and every such offence, to be recovered as sums of like amount are now by law recoverable.

Section 4. That the sum of three thousand dollars is hereby appropriated to execute the duties enjoined upon the Chief Engineer of the Water Department, by the first section of this ordinance.

Yeas—Messrs. Beideman, Benton, Bradford, Cornman, Cuyler, Davis, Enos, Ford, Foster, Kline, Leidy, McIntyre, Nathans, Neal, Norman, Parker, Read.—17.

Nays—Messrs. Loughlin, Schofield, Wharton, Pres.—3.

HAD NOTHING TO SAY.—Mr. Birkenbine, the Chief Engineer of the Water Works, has sent a communication to Councils specifying various repairs which are needed. Strange to say, Mr. Birkenbine has not a single suggestion to make in relation to the scarcity of water in various parts of the city, and the measures proper to relieve the wants of consumers. Inasmuch as this subject is just at this time the most important which occupies the public mind, the silence of Mr. Birkenbine is somewhat remarkable.

26

129

ORDINANCES.

AN ORDINANCE TO MAKE AN Appropriation to the Department for Supplying the City with Water for the year eighteen hundred and fifty-eight.

SECTION 1. The Select and Common Councils of the City of Philadelphia do ordain, That the sum of one hundred and forty-five thousand eight hundred and ten dollars be and the same is hereby appropriated to the Department for supplying the City with Water for the year eighteen hundred and fifty-eight, for the following purposes, namely:

1. For the Salary of the Chief Engineer twenty-five hundred dollars.
2. For the Salary of the Register, eighteen hundred dollars.
3. For the Salaries of one Chief Clerk and three Permit Clerks, three thousand five hundred and fifty dollars.
4. For the salaries of four Inspectors, twenty-four hundred dollars.
5. For the Salaries of four Surveyors and one Messenger, thirty-one hundred dollars.
6. For extra Clerk hire, five hundred dollars.
7. For Salary of Chief Engineer, including house rent, at Fairmount Works, eight hundred dollars.
8. For Salaries of two Assistant Engineers at same works, fourteen hundred dollars.
9. For Salary of one Watchman at same works, five hundred dollars.
10. For Salaries of two Engineers at Delaware Works, including house rent, sixteen hundred dollars.
11. For Salaries of five Firemen at same works, two thousand three hundred and ten dollars.
12. For salaries of two Watchmen at same Works, one thousand dollars.
13. For Salaries of two Engineers at Schuylkill works, fourteen hundred dollars.
14. For Salaries of two Assistant Engineers at same works, nine hundred dollars.
15. For Salaries of ten Firemen at same works, four thousand five hundred dollars.
16. For Salary of Watchman at same works, five hundred dollars.
17. For salaries of two Engineers, including house rent at Twenty-fourth Ward Works, sixteen hundred dollars, and for salary of two Firemen at same Works, nine hundred dollars.
18. For the purchase of coal at the Fairmount Works, three hundred and fifty dollars.
19. For the purchase of coal at Delaware Works, seven thousand five hundred dollars.
20. For the purchase of coal at the Schuylkill Works, twelve thousand five hundred dollars.
21. For the purchase of coal at the Twenty-fourth Ward Works, fifteen hundred dollars.
22. For the purchase of wood for the several works, for kindling purposes, four hundred dollars.
23. For the purchase of tallow and oil for the Schuylkill Works, fifteen hundred dollars.
24. For the purchase of tallow and oil for Delaware Works, eight hundred dollars.
25. For the purchase of tallow and oil for Fairmount Works, one thousand dollars.
26. For the purchase of Tallow and Oil for Twenty-fourth Ward Works, four hundred dollars. (Items 23, 24, 25 and 26, include oil for lighting the works.)
27. For repairs to Fairmount Works, including labor, lumber, and other materials, one thousand dollars.
28. For painting at Fairmount Works, one thousand dollars: Provided, that sealed proposals shall be received therefor and opened in the presence of the Committee on Water Works.
29. For repairs to Delaware Works, one thousand dollars.
30. For repairs to Schuylkill Works, two thousand dollars.
31. For repairs to Twenty-fourth Ward Works, four hundred dollars. Provided, that no expenditures shall be made from Items 27, 29, 30, or 31, exceeding in amount the sum of two hundred dollars, unless by special authority of Councils.
32. For the purchase of small stores, tools, soap, white and red lead, packing hemp and gum, &c., for all the Works, one thousand dollars.
33. For the purchase of iron pipes, fire plugs, stop cocks, lead, brass castings, fire plug castings, and other fixtures and materials connected with the laying of pipes and setting of plugs, forty-five thousand dollars.
34. To pay for labor connected with laying of pipe and setting of plugs, and for labor in fitting up stop cocks and fire plugs, eighteen thousand five hundred dollars. Provided, That all digging or excavation for the laying of pipe shall be done by contract to the best and lowest bidder, under the supervision of the Committee on Water.
35. To pay for keeping the pipes, plugs, stops and fixtures in good order, and for making new attachments, twelve thousand five hundred dollars. Provided, That no contracts shall be entered into for work, supplies, or materials contemplated by Items 33 and 34, unless by special authority of Councils, or from Item 35, exceeding the sum of four hundred dollars in any one month, unless by said authority.
36. To pay State Taxes on all the works, five hundred dollars.
37. To pay for keeping the building, grounds and reservoirs in good order, twenty-five hundred dollars.
38. To pay for books, stationery, advertising, printing, binding, and posting bills, one thousand dollars.
39. For carriage hire, one hundred and fifty dollars.
40. For fuel for offices, cleansing offices, ground rent of shop and incidentals, eight hundred and fifty dollars.
41. To pay the Germantown Water Company, for supplying eighty fire plugs belonging to the city with water, four hundred dollars. Provided, that before any money is paid as provided for in this item, the Committee on Water Works shall inquire into the number of plugs, and whether the city is liable for the payment thereof, as contemplated in this Ordinance, and report the same to Councils.
42. For introducing gas into the Fairmount Water-Works, five hundred dollars.
43. For preparing the grounds and planting trees on the lot north of Fairmount Basin, under the supervision of the Committee on Water Works, three hundred dollars.

SECT. 2. That before any contract shall be entered into for supplies of Tallow, Oil or Coal, as contemplated by Items 18, 19, 20, 21, 23, 24, 25 and 26, or any purchases made therefor, it shall be the duty of the Chief Engineer to receive sealed proposals, after public advertisement in two daily newspapers, not less than one week daily in each, which said proposals shall be opened in the presence of the Committee on Water, and be reported (with all the bids) to Councils for their approval.

SECT. 3. That warrants for the said appropriation shall be drawn in conformity with existing Ordinances.

JOHN MILLER,
President of Common Council.

Attest—JOHN D. MILES,
Clerk of Common Council.

G. M. WHARTON,
President of Select Council.

Approved this twenty-seventh day of January, A. D. one thousand eight hundred and fifty-eight, (A. D. 1858.)

RICHARD VAUX,
Mayor of Philadelphia.

jan30-3t

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these provisions, and therefore keeps its eye upon 10,000 dealers in those articles.

We are authorized to contradict formally, and on authority of positive accounts from St. Petersburg, says the *Nord*, the rumor spread by some foreign journals, of hostilities having broken out on the Amur between the Chinese and the Russians.

Mr. Drayton moved that they proceed to consider the Appropropriation Bills, which was agreed to.

The ordinance appropriating $137,110 to the Watering Department was then read. The following are the principal items:—

Salary of the Chief Engineer	$2,500
Salary of the Register	1,800
Salaries of one Chief Clerk and three Permit Clerks	3,550
Salaries of four Inspectors	2,400
Salaries of four Surveyors and one Messenger	3,100
Extra Clerk hire	500
Salary of Chief Engineer	800
Salaries of two Assistant Engineers	1,400
For salary of one Watchman at same works	500
For salaries of two Engineers at Delaware Works	1,600
For salaries of five Firemen at same works	2,310
For salaries of two watchmen	1,000
For salaries of two Engineers at Schuylkill works	1,400
For salaries of two assistant Engineers	900
For salaries of ten Firemen at same works	4,500
For salary of Watchman	500
For salaries of two Engineers at 24th Ward works	1,600
For the purchase of coal at the Fairmount works	350
For the purchase of coal at the Delaware works	7,500
For the purchase of coal at the Schuylkill works.	12,500
For the purchase of coal at 24th Ward works	1,500
For the purchase of tallow and oil for the Schuylkill works	1,500
For the purchase of tallow and oil for the Delaware works	800
For the purchase of tallow and oil for the Fairmount works	1,000
For repairs to Fairmount	1,000
For repairs to Delaware Works	1,000
For repairs to Schuylkill Works	2,000
For repairs to Twenty-fourth Ward works	400
For the purchase of iron pipes, fire plugs, stop cocks, &c	45,000
To pay for labor connected with laying of pipe and setting of plugs	18,500
To pay for keeping the pipes, plugs, stops and fixtures in good order, and for making new attachments	12,500
To pay for keeping the building, grounds and reservoirs in good order	2,500

Mr. Casey moved to amend to add $500 for the introduction of gas into the grounds and works at Fairmount, which was agreed to.

Mr. King desired some explanation in regard to the bill. The Chief Engineer had asked for $171,010, while the Committee only appropriated to him this year $137,000—a a sum totally inadequate to the wants of the department, and throwing the odium of the deficiency upon their successors. The department had appropriated to it last year $155,510—all of which had been expended. He was opposed to appropriating less than the department actually required, and making up the deficiency at the end of the year by a permanent loan.

Dr. Fitler moved to strike out $400 to pay the Germantown Water Company for furnishing water to the fire plugs. Not agreed to.

Capt. Day moved to amend by adding that "all the excavations done for the laying of pipe, be done by contract." Agreed to.

A lengthy discussion now ensued between Messrs. Parker, Drayton, King, Holman, O'Neil and others, in regard to the proposition of appropriating so small an amount to this department.

A motion to recommit the bill to the Finance Committee was not agreed to.

The First Section was then agreed to.

The Second Section, which provides that all supplies of coal, &c., shall be made by contract, was agreed to.

The bill then passed a final reading.

One from Chief Water Engineer, announcing the following nominations:—

Permit Clerks—Thomas S. Darling, in place of A. A. Lamorelli; Joseph M. Simons, in place of Samuel S. Snyder; George H. Moore, in place of J. T. Maxwell.

Messenger—George W. Mellar, in place of Charles Vesey.

Inspectors—First district—D. W. Gamble, in place of Edward W. Power. Second district—Stephen Farrand, in place of Samuel T. Leech. Third district—Cyrus Krauser, in place of Matthew Brady. Fourth district—Alex. McConnell, in place of Wm. R. Schofield.

Purveyors—First district—Robert E. Hicks, in place of Charles M. D. Smith. Second district—David B. Morrell, in place of Charles Peters. Third district—John Seddinger, in place of Joseph Hunker. Fourth district—Abram Myers, in place of George Esher.

The Board of the Brooklyn Water Works, consisting of Mr. Jervis, Contractor of the Croton Works, Mr. Graeff, ex-Engineer of the Philadelphia Works, and Mr. Clark, formerly State Engineer, made their Report yesterday. Instead of a canal from the ponds to Ridgewood Reservoir they recommend a covered conduit, giving their reasons in full for the plan they propose. 52 Dec 12/58

TWELVE O'CLOCK AT NEW YORK.—Appleton's Railway and Steam Navigation Guide, of June, has on page 27, a "Time Indicator," which shows the difference of time between various cities in the United States. When it is twelve o'clock in New York, it is— 53

At Boston, Mass.,	12 minutes past 12
At Portland, Maine,	16 minutes past 12
At Philadelphia, Pa.,	55 minutes past 11
At Baltimore, Md.,	50 minutes past 11
At Richmond, Va.,	46 minutes past 11
At Buffalo, N. Y.,	40 minutes past 11
At Charleston, S. C.,	36 minutes past 11
At Pittsburgh, Pa.,	35 minutes past 11
At Wheeling, Va.,	31 minutes past 11
At Cleveland, Ohio,	30 minutes past 11
At Augusta, Ga.,	30 minutes past 11
At Detroit, Mich.,	24 minutes past 11
At Columbus, Ohio,	24 minutes past 11
At Cincinnati, Ohio,	20 minutes past 11
At Indianapolis, Ind.,	14 minutes past 11
At Louisville, Ky.,	14 minutes past 11
At Chicago, Ill.,	6 minutes past 11
At New Orleans, La.,	55 minutes past 10
At St. Louis, Mo.,	55 minutes past 10
At St. Paul, Minnesota,	44 minutes past 10

AN ORDINANCE TO MAKE AN APPROPRIATION to the Department for Supplying the City with Water for the year eighteen hundred and fifty-seven, and to pay Debts contracted in previous years.

SECTION 1. The Select and Common Councils of the city of Philadelphia do ordain, That the sum of one hundred and fifty-five thousand five hundred and ten dollars be and the same is hereby appropriated to the Department for supplying the City with Water for the year eighteen hundred and fifty-seven, for the following purposes, viz:

Item 1—For the salary of the Chief Engineer, twenty five hundred dollars, ($2,500.)

Item 2—For the salary of the Register, eighteen hundred dollars, ($1,800.)

Item 3—For the salary of the Chief Clerk, one thousand dollars, ($1,000.)

Item 4—For the salaries of three Permit Clerks, two thousand five hundred and fifty dollars, ($2,550.)

Item 5—For the salaries of four Inspectors, twenty-four hundred dollars, ($2,400.)

Item 6—For the salaries of four Purveyors and one Messenger, three thousand one hundred dollars, ($3,100.)

Item 7—For extra Clerk hire, five hundred and twenty-five dollars, ($525.)

Item 8—For salary of Chief Engineer, including house rent at Fair Mount Works, eight hundred dollars, ($800.)

Item 9—For salaries of two Assistant Engineers, at the same Works, fourteen hundred dollars, ($1,400.)

Item 10—For salary of one Watchman, at same Works, five hundred dollars, ($500.)

Item 11—For salaries of two Engineers at Delaware Works, including house rent, sixteen hundred dollars, ($1,600.)

Item 12—For salaries of five Firemen, at same Works, two thousand three hundred and ten dollars, ($2,310.)

Item 13—For salaries of two Watchmen, at same Works, one thousand dollars, ($1,000.)

Item 14—For salaries of two Engineers, at Schuylkill Works, fourteen hundred dollars, ($1,400.)

Item 15—For salaries of two Assistant Engineers, at same Works, nine hundred dollars, ($900.)

Item 16—For salaries of ten Firemen, at same Works, four thousand five hundred dollars, ($4,500.)

Item 17—For salary of Watchman, at Schuylkill Works, five hundred dollars, ($500.)

Item 18—For salaries of two Engineers, including house rent, at Twenty-fourth Ward Works, sixteen hundred dollars, ($1,600.)

Item 19—For salaries of two Firemen, same Works, nine hundred dollars, ($900.)

Item 20—For the purchase of Coal at Fairmount Works, three hundred and fifty dollars, ($350.)

Item 21—For the purchase of Coal at Delaware Works, seven thousand five hundred and twenty-five dollars, ($7,525.)

Item 22—For the purchase of Coal at Schuylkill Works, twelve thousand nine hundred dollars, ($12,900.)

Item 23—For the purchase of Coal at Twenty-fourth Ward Works, fifteen hundred dollars, ($1,500.)

Item 24—For the purchase of Wood at the several Works, for kindling purposes, twelve hundred dollars, ($1,200.)

Item 25—For the purchase of Tallow and Oil for Schuylkill Works, fifteen hundred dollars, ($1,500.)

Item 26—For the purchase of Tallow and Oil for Delaware Works, eight hundred dollars, ($800.)

Item 27—For the purchase of Tallow and Oil for Fair Mount Works, one thousand dollars, ($1,000.)

Item 28—For the purchase of Tallow and Oil for Twenty-fourth Ward Works, four hundred dollars. [Items 25, 26, 27, and 28, includes oil for lighting the Works.]—($400)

Item 29—For Repairs to Fairmount Water Works, including labor, lumber, and other materials, four thousand dollars. ($4000.)

Item 30—For Repairs to Delaware Works, eighteen hundred dollars. ($1800.)

Item 31—For Repairs to Schuylkill Works, two thousand seven hundred dollars. ($2700.)

Item 32—For Repairs to Twenty-fourth Ward Works, five hundred and fifty dollars, ($550.)

Item 33—For the puschase of small stores, tools, soap, white and red lead, &c, for all the Works, one thousand dollars, ($1000.)

Item 34—For the purchase of Packing, hemp and gum, for all the pumps and engines, one thousand dollars.—($1000.)

Item 35—For the purchase of Iron Pipes, Fire Plugs, stop cocks, branches, and other fixtures connected with the laying of pipes and setting of plugs, forty one thousand seven hundred dollars, ($41,700.)

Item 36—To pay for labor connected with laying of Pipes and setting Plugs, eighteen thousand three hundred dollars, ($18,300.)

Item 37—To pay for keeping Pipes, Plugs, and fixtures in good order, and for making new attachments, twelve thousand five hundred dollars, ($12,500.)

Item 38—To pay State Tax on all the Works, fifteen hundred dollars, ($1500.)

Item 39—To pay for keeping the Grounds and Reservoirs in good order, two thousand five hundred dollars, ($2500.)

Item 40—To pay for books and statioery, printing and advertising, binding, fuel for office, posting bills, cleaning office, ground rent on shop, carriage hire for Committees; and incidentals, three thousand dollars, ($3000.)

Item 41—To pay for painting buildings at Fairmount and Schuylkill Works, one thousand dollars, ($1000.)

Item 42—For connecting the water pipes in the Fifteenth Ward, with the water main on Thompson street, five thousand dollars, (5,000.)

SECTION 2. That the further sum of fourteen thousand dollars be and the same is hereby appropriated to pay the President and Managers of the Schuylkill Navigation Company for the City's half of a certain judgment obtained by Jonathan and Andrew Robeson, for damage sustained by raising the dam at Fairmount.

SECTION 2. That the further sum of nine thousand two hundred and seenteen dollars and twelve cents, be and the same is hereby appropriated to pay the following debts contracted for by the Department for supplying the City with Water, over and above the appropriation for the year 1856, and without authority of Law or Ordinance.

Item 1—To pay Lewis Chester & Co., for oakum, &c., one hundred and fifty-eight dollars and eighty cents, ($159 80.)

Item 2—To pay Woodbridge & Metcalf, for painting engine, two hundred and six dollars and fifty cents, ($206 50.)

Item 3—To pay J. & H. Jones, for brass castings, seven hundred and fifteen dollars and five cents, ($715 05.)

Item 4—To pay Richard Trinick, for blacksmith work, ninety two dollars and sixty two cents- ($92 62.)

Item 5—To pay George Megee, for brass and copper bolts, forty one dollars and twenty-five cents, ($41 25.)

Item 6—To pay C. S. Close, for measuring pipe, twenty-six dollars and twenty-two cents, ($16 22.)

Item 7—To pay J. Bommershein, for carpenter work, thirty-seven dollars and eighteen cents, ($37 18.)

Item 8—To pay Stileman & Co., for stop-cocks and fire plugs, one thousand and fifty dollars, ($1,050.)

Item 9—To pay Wages in laying Pipes, as per pay rolls five thousand two hundred dollars, ($5,200.)

Item 10—To pay for repairing Pipes and Plug Stops, one thousand four hundred dollars, ($1,400.)

Item 11—To pay W. H. Knight, for Hardware, one hundred and forty-seven dollars, ($147.)

Item 12—To pay J. B. Evans, for Bricks, forty-two dollars and fifty cents, ($42 50.)

Item 13—To pay sundry and small Bills, one hundred dollars, ($100.)

SECTION 4. That no contracts shall be entered into for work, supplies, or materials contemplated by Items 20, 21, 22, 23, 35, 36, 42, unless by special authority from

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THE INQUIRER.

THE COMETS.

Sep 30/58

Readers of the *Inquirer* have been informed of many facts concerning the comets now visible, either with the naked eye or by instruments, but as there is much confusion in some minds, through the ragged narratives which have been made public, we will endeavor to present the whole subject in a clear light.

THE DONATI COMET.

This comet, now visible in the Northwest heavens after sunset, is the identical one, seen also before daylight in the Northeast. It has a considerable Northern declination, and a right ascension that varies but little from that of the sun; hence we see it at eve and morn. According to Mr. Hall's computation, at the Cambridge Observatory, the tail of this comet, a week ago, September 23d, extended fifteen millions of miles, and it is distant from the Earth about fifty-two millions of miles. The nucleus will be near the bright star Arcturus October 5th, and nearest the Earth's orbit October 20th. Mr. J. R. Hind, of the Regent's Park Observatory , says of this Comet:—

> That between the 1st and 20th of September, at 8 o'clock, P. M., Greenwich time, the comet will be found about 16 degrees above the northwest point of the horizon, and, as its tail is rather conspicuous, there will be no difficulty in fixing upon the right object. It will become gradually brighter, until lost through proximity to the sun at the commencement of October. On August 30th, the comet was just perceptible to the naked eye; its nucleus is strongly condensed and brilliant, and the tail is thrown off in the ordinary form without bifurcation. Having remarked that about the passage through the desceding nede this body must approach near the planet Venus, calculate its distances between the 15th and 23d of October, and find the following results:—

Distance of Comet from Venus in Decimals of the Earth's Mean Distance.

Oct. 15	0·169	Oct. 21	0·154
Oct. 17	0·113	Oct. 23	0·224
Oct. 19	0·105		

It is evident from these numbers that the inhabitants of Venus will see the celestial visitant to great advantage about the middle of October, and probably will retain as lasting a remembrance of the comet of 1858 as we of the famous comet of 1811.

Its Peculiarities.—A very striking characteristic, when it was first discovered, was its very slow motion. Its great distance and the direction of its motion as seen from the earth, rendered its apparent geocentric motion very small. In consequence of this, it was difficult to fix upon its orbit with much accuracy, and there has been a difference of opinion upon that subject. It has already been visible in this country through a telescope, for two months and a half; and, notwithstanding the numerous observations that have been made, it is doubtful when it will pass its perihelion, or the point where it is nearest to the sun.—As calculated at the Cambridge Observatory, it would not reach its perihelion until about September 20th, but on the 25th of September, Mr. W. C. Bond said that it will soon rapidly increase in size and brilliancy, being nearest to the earth, October 9th, at which time it will be thrice as brilliant as it was September 23d. Thus all persons who have not seen the illustrious stranger should now take a view. Children should be afforded an opportunity to inspect it, as a view of it can be had from any point commanding the sweep of the western horizon. Mr. Parkhurst has said of it:—

> "It will be approaching both the earth and the sun until October, (or at least not materially receding from the sun) and will not probably reach the maximum of *inherent* brightness before the middle of October. It will therefore continue to grow more conspicuous until it begins to be again merged in the twilight. But it will very soon change its course to the South, and move so rapidly that it is not likely that it will be seen so late. My last observations seem to indicate a decidedly elliptical orbit." He adds that the orbit cannot be parabolic, as that would not correspond with the observed positions of the comet in June and July last. An elliptical orbit, the ellipse being of moderate eccentricity, would give a period of revolution around the sun much shorter than a parabola. The motions correspond very nearly with those of the first comet of 1827, and with those of the comet of 1764. This would make the period of revolution about 31 years, and allow of two revolutions between 1764 and 1827, as a difference of half a year in the period of revolution may be readily accounted for by the perturbations. If this be the correct period, its next return may be expected about 1889 or 1890. It should be observed that this supposition is based entirely upon the hypothesis of identity of motion.

Its Position.—It is situated near Ursa Major, and is moving towards Arcturus—being low down to the horizon and about as far to the left of "the pointer" as the North Star is to the right. The tail is well defined, and about three degrees in length.

Its Discovery.—It was first discovered in Florence, Italy, June 2d, by Dr. Donati, and in this country, at Cambridge, June 28th, and by Henry M. Parkhurst, Perth Amboy, N. J., June 29th, before the European discovery had been announced. Miss Maria Mitchell discovered it July 1st, before she had heard of its appearance. It was about the size of a star of the eleventh magnitude when it was first discovered.

Its Identity.—The astronomers differ in their theories. Thus it was thought at first to be identical with the comet of 1764 and 1827, with a period of thirty-one years. Mr. Parkhurst and the Cambridge astronomers do not agree. The latter think a parabolic orbit will better represent its motion than an elliptic. If this be true, it does not belong to our solar system, and is now in it, possibly, for the first time, and will shortly leave for another. Whatever may be the fact, it is an illustrious celestial visitor.

THE ENCKE COMET.

This stranger, now visible also, though but feebly, to the naked eye, was seen with powerful instruments by Mr. Hind, London, August 15th. It was originally discovered by Pons, in 1818, and named "Encke," after the celebrated philosopher. It has been mistaken for the Faye comet discovered by the astronomer of that name, in 1848. It revolves around the earth every three and a third of years, or forty months. Its regularity is almost planetary, and when in aphelion, or most distant, it is not beyond the orbit of Jupiter.

THE FAYE COMET.

This comet must now be within the range of the telescope, though no one has detected it. It is a periodical visitor. Its interval is 2718 days, or 7·44 years. It was discovered, as has been said above, in 1843, returned in 1851, and may be looked for near the ecliptic in the constalletion, Taurus.

THE THIRD COMET.

We designate it thus till its identification is settled. It was discovered at the Cambridge Observatory, Sept. 5th, by Mr. Tuttle. It can only be seen with the telescope. "It is conjectured," says the N. Y. *Evening Post*, "to be the great expected comet of 1264 and 1556. All astronomers agree in extolling its splendor. Its tail is said to be more than 100 degrees in length, or one-half of the visible heavens. Its first disappearance was on the night of the death of Pope Urban IV. The interval included in the two former epochs of its appearance is about 292 years, which would place its return in the year 1848. Accordingly, its return was predicted in that year; but it was subsequently discovered that in consequence of planetary disturbance, its return will be between the year 1856 and the close of 1860. One class of elements would lead us to expect its return in August of the present year; and hence its supposed identity with the third body now appearing in the northern heavens."

The Boston *Traveller* says:—

> It is apparently a new comet, and has no resemblance to that of 1556. This comet (September 11) had not been discovered in Europe, as no notice of it had appeared in the London *Times* up to that day. It is now in the circle of perpetual apparition in our latitude, or revolves around the Pole without setting.

THE EVENING STAR.

PHILADELPHIA, MONDAY, JAN. 25.

PUBLISHED DAILY, EXCEPT SUNDAY,
BY SCHOOL & BLAKELY,
AT 30 SOUTH SEVENTH STREET.

☞ Circulation larger than any daily paper in Philadelphia, with a single exception.
☞ Communications solicited on all topics of public interest, especially those of local character.

OUR WATER SUPPLY.—A correspondent asks whether the arrangements for a supply of water to the steam fire engines, in case of another serious conflagration in the Sixth ward, are sufficient? We are not informed as to the amount of the water supply in this ward, but it is very evident that if there is any doubt upon the subject, that doubt should be resolved at once. The amount of valuable property embraced within the limits of the Sixth ward is immense—far in excess of any other ward in the city; and to protect this property, there should be not only an ample supply of water, but more and better plugs for the accommodation of the steam fire engines. A few days since we adverted to the fact that, at the fire on Chestnut street, below Fourth, it was found impossible to attach the steam hose to the plug at the corner of Chestnut and Hudson's alley. As a consequence, the fire obtained a headway which resulted in a heavy loss of property. This should not be. There is no apology for it, and the sooner the difficulty is remedied the better. The number of disastrous fires that have occurred in the city during the past two or three months, the fact that in a number of cases the supply of water was wholly inadequate, and that much more serious damage was the necessary result, ought to open the eyes of the proper authorities to the importance of immediately seeing to this matter. As conservators of public welfare we call upon these authorities, whoever they may be, to give it their attention at once. If the plugs are defective in arrangement or not of sufficient capacity to supply the required amount of water, others should be substituted for them. Why do not insurance companies, which have such heavy interests at stake, take hold of this matter and ascertain to what extent there is a deficiency in our water supply? They will find the thousands of business men and property holders, not of the Sixth ward merely, but of the entire city, ready and anxious to cooperate with them. In the meantime the imperative duty of the authorities of the Water Department is a very plain one. 2

LEDGER AND TRANSCRIPT.

Philadelphia, Friday, August 23, 1867.

THE LATEST NEWS.

THE WATER SUPPLY—CONDITION OF THE WORKS.—The supply of water to the citizens continues to be limited, and the difficulty will not be fully overcome before the commencement of next week. This state of things is attributable altogether to the damage done to the works by the recent heavy rain storms, and the high tides in the Schuylkill which immediately followed, preventing the running of the pumps at Fairmount. To fully understand the difficulty which followed the storm, it is necessary for our readers to know the exact capacity of the works which supply the city. The works can pump each day as follows:

Fairmount	24,000,000	gallons.
Schuylkill or Spring Garden Works	8,000,000	"
Delaware Works	3,000,000	"
Twenty-fourth Ward works,	1,000,000	"
Total	36,000,000	"

Now, when it is considered that this amount of water is less by 7,000,000 gallons than is used at times in one day, it can readily be understood that any disarrangement of the works will so reduce the amount usually stored as to make the most economical use of the water necessary. The storage capacity of the works is as follows:

Fairmount, 4 reservoirs		$27,000,000	gallons.
Corinthian ave.,	1 "	40,000,000	"
Spring Garden,	2 "	9,000,000	"
Delaware,	2 "	9,000,000	"
Total		85,000,000	

which is less than three days' mean average supply, or two days of the greatest demand, which reached in one day last year to 43,250,000 gallons. This demand then continued for three days, reducing the reservoirs about five feet.

On last Thursday two weeks our city was visited by the first heavy rain storm. It being local in its character, the freshet in the Schuylkill was not very great, but the washing away of the Reading Railroad embankment, near the Spring Garden Water Works, nearly filled the forebay of the works with sand, thus stopping for several days the supply of water from that source. Just as these works were again ready to commence opera-

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LIST OF KNOWN COMETS.

The periodicity of the last twelve of the annexed list, or of those whose computed times of revolution exceeds fourteen years, with the single exception of "Halley," cannot be rendered certain except by their actual return. The Albany *Statesman* says:—

> It will be seen that in all but seven instances, the comets bear the names of the astronomers by whom they were first observed. In these seven exceptions, titles have been selected by the discoverers, principally from the names of individuals whom they have desired to honor.

Comet of	*Period. Years.*	*Discovered by*	
Encke	3·3	Pons	1818
Blanpain	4·8	Blanpain	1819
De Vico	5·5	De Vico	1844
Brorsen—Brhuns	5·6	Brorsen Brhuns	1846 1857
Lexell	5·6	Messier	1770
Pons—Winnecke	5·6	Pons Winnecke	1819 1848
D'Arrest	6·4	D'Arrest	1851
Biela	6·6	Montaigne	1772
Faye	7·4	Faye	1843
Peters	12·8	Peters	1846
Mechain—Tuttle	13·6	Mechain Tuttle	1790 1858
Westphal	60·0	Westphal	1852
Pons	70.7	Pons	1812
De Vico	72·8	Jesuits	1846
Olbers	74·0	Olbers	1815
Brorsen	75·0	Brorsen	1847
Halley	76·1	Apian	1531
Flamsteed	190·0	Flamsteed	1683
Olcott	241·0	Peters	1857
Charles V	292·0	Fabricius	1556
Bremiker	344·0	Bremiker	1840
Brorsen	401·0	Brorsen	1846
Perry	422·0	Perry	1793

DISTANCES FROM NEW YORK TO SOME OF THE MOST IMPORTANT PLACES IN THE UNITED STATES.

7

Names of Places.	Miles.	Hour
Boston	236	10
Philadelphia	87	4
Baltimore	184	10
Washington	224	12
Albany	144	6
Saratoga Springs	183	8
Whitehall	223	10
Burlington, Vt.	301	16
Montreal, Can.	403	23
Buffalo, via Albany	469	24
Buffalo, via Elmira and Seneca Lake	471	22
Dunkirk, via N. Y. and Erie R. R.	474	18
Cleveland, Ohio, via Albany	563	39
Cincinnati, via N. Y. and Erie R. R. and Sandusky City	897	50
Cincinnati, via N. Y. and Erie R. R. and Cleveland	877	4
New York to Buffalo, via N. Y. and Erie R. R.		
Detroit	759	40
Chicago	1,048	59
Milwaukie	1,100	62
St. Paul, Minnesota Territory	1,623	132
St. Louis, via Chicago	1,475	118
New Orleans, via St. Louis	2,676	252
Pittsburgh, via Philadelphia	470	50
Wheeling, via Baltimore	492	46
Cincinnati, via Pittsburgh	847	106
St. Louis, via Pittsburgh	1,644	240
New Orleans, via Pittsburgh	2,495	300
Charleston, S. C., via Washington	781	63
Savannah, Georgia	907	70
Montgomery, Alabama	1,299	108
Mobile	1,496	148
New Orleans	1,662	168
Memphis, Tenn.	1,507	192

CROTON AQUEDUCT BOARD.

This board consists of three members, who are respectively entitled the President, Engineer and Assistant Commissioner, and are appointed by the Mayor for five years. The President and Assistant Commissioner receive each a salary of $3,000 per annum, and the Engineer $5,000. To this board is entrusted the entire management of the Croton Aqueduct, and all the structures and property connected with the distribution of Croton water through the city, as well as the underground drainage of the same, and they receive all the revenues arising from the supply of water. The Croton Aqueduct Board also attends to the paving, repaving and repairing the streets, contracting sewers, digging wells, and issuing permits for street vaults. These duties are supposed by many people to belong to the Street Commissioner's or City Inspector's department; but they belong exclusively to the Croton Aqueduct Board, to whom application must be made in all cases where the streets are in bad condition from ruts, holes, broken pavements, imperfect drainage, and so forth. There are two bureaus in this department, namely: that of the Water Registrar, who collects the revenues; and the Water Purveyor, who superintends the laying of pipes, hydrants, making sewers, and keeping the street pavements in repair. This department was created by an act of the Legislature, passed April 11, 1849. The president reports on the 1st of January to the Comptroller a list of all unpaid water rents for the preceding year, which remain as a lien on the property to which the rent applies, and the Comptroller is authorized to sell the property for the arrears in the same manner as for unpaid taxes.

The Water Rates of the City of Philadelphia.—The following are the rates paid by dwellings, stores, public buildings, manufactories, &c., for the use of water from the public water-works of the city. Every individual using the water, can compare his bills with those rates, and see that the charges correspond with the rates fixed by ordinance:

	per an.
DWELLINGS.	
Hydrant in yard and kitchen, or either,	$5 00
Hydrant in yard and kitchen, and each supplied by a separate ferule from the main, for each public attachment,	5 00
Baths, each tub,	3 00
Baths; if supplied by a separate ferule from the main—for one bath only,	5 00
For each additional bath,	3 00
Water Closets, each,	1 00
Urinals, each,	1 00
Biddets, or foot tubs, each,	1 00
Wash Basins in chambers, each,	1 00
Wash Basins, or sinks in pantries, each,	1 00
Wash Pavements of every description, each,	3 00
SMALL DWELLINGS.	
Fronting on courts, with hydrant, each,	2 50
Fronting on private streets, under 20 feet in width, with hydrant, each,	2 50
Fronting on private streets, of 20 feet in width, or more, and having two rooms on a floor, each,	5 00
Fronting on public streets, having but one room on a floor, and occupied exclusively as dwellings, with hydrant, each,	2 50
Fronting on public streets, or private streets, of 20 feet in width, or more, having but one room on floor, with a one-story kitchen back, shall be rated a three-quarter house, and charged, each,	3 75
STORES.	
Hydrant in yard, or basin in the store,	5 00
Each Basin or sink, additional,	2 00
Water Closets, double acting, self-closing each,	1 00
Water Closets, single acting or hopper, each,	2 00
Urinals, self-closing, each,	2 00
Urinals of other descriptions, each,	3 00
PUBLIC BUILDINGS.	
Hydrants, each,	5 00
Each Basin or sink,	3 00
Water Closets, double acting, self-closing, each,	3 00
Urinals, self-closing, each,	3 00
Water Closets, and urinals, of other descriptions, each,	5 00
HOTELS.	
Hydrant, family keeping the hotel,	5 00
Hotel Bars, with water in or not,	10 00
Wash Basins, each,	2 00
Slop Sinks, each,	3 00
Water Closets, double acting, each,	3 00
Water Closets of other descriptions, each,	5 00
Urinals, self-closing, each,	3 00
Urinals, of other descriptions, each,	5 00
Baths, for use of boarders, each,	6 00
Wash Tubs, in washing room, each,	1 00
Kitchen, according to capacity and number of draw-cocks,	$5 to 25 00
Boarders, ten persons or under,	5 00
Boarders, 25 persons or under,	10 00
Boarders, for each 25 persons, additional,	5 00
Horse-troughs, for watering horses,	10 00
STABLES.	
Livery Stables, per stall,	1 00
Each four-wheel carriage,	1 00
Each two-wheel carriage,	0 50
Country Stables, per stall,	0 50
PUBLIC BATHING ESTABLISHMENTS.	
Baths, each tub,	6 00
BAKERIES.	
Family Bakers, in addition to charge for dwelling, each,	3 00
Large establishments rated according to capacity.	
BARBER SHOPS.	
One Basin, private attachment,	3 00
One Basin, public attachment,	5 00
Each additional Basin,	1 00
DRUG STORES.	
One Sink, private attachment,	2 50
One Sink, public attachment,	5 00
Counter Fountains, not exceeding one sixteenth of an inch,	5 00
PUBLIC SCHOOL.	
Each one hundred children,	3 00
And their several openings to be charged the same as in public buildings.	
HATTERS' PLANKS.	
Fours, per set,	8 00
Sixes, per set,	10 00
Eighths, per set,	12 00
And the dye houses assessed in accordance with their capacity.	
BUILDING PURPOSES.	
Bricks, per thousand,	0 05
Stone, per perch,	0 02
PACKETS SHIPS, OR OTHER VESSELS.	
For each hundred gallons water,	$0 05
STEAM ENGINES.	
High Pressure Steam Engines, per horse power,	3 00
Low Pressure Steam Engines, per boiler only,	4 00
DISTILLERIES, BREWERIES, DYE HOUSES AND MANUFACTURING ESTABLISHMENTS,	
Rated according to capacity and size of ferule granted.	
FOUNTAINS.	
Flowing ten hours a day for six months of the year, from a half-inch ferule, (*five dollars being always charged on the first opening.*)	
For the first jet of 1-16th of an inch,	6 00
For each additional jet of 1 16th,	1 00
For the first jet of ⅛ of an inch,	7 50
For each additional jet of ⅛th,	2 50
For the first jet of ¼th of an inch,	14 00
For each additional jet of ¼th,	9 00
For half-inch jet,	32 00
No ferule larger than a half inch granted for fountains exclusively.	
For a flow of water 12 hours per day—	
From a ¼ inch ferule, per annum,	$200 00
Do ⅜ inch do do	315 00
Do ½ inch do do	450 00
Do ⅝ inch do do	600 00
Do 1 inch do do	800 00

The following Ordinances of the city, in relation to the use of the Schuylkill Water, are published for the information of Plumbers and others:

Ordinance, March 15, 1806.—Section 4. If any Plumber or other person shall, without a written or printed permit from the Watering Committee, introduce a ferule into any public or private pipes, or form any connection or communication whatever with said pipes, or break ground for that or any other similar purpose, in the public streets or alleys; or if any person or persons shall introduce or use a ferule of a larger diameter than is specified in his or their permits, he, she or they so offending, shall forfeit and pay for each and every such offence, the sum of *twenty dollars*, and for every day's continuance of the use of such pipe, after conviction, the further sum of *one dollar*.

SUPPLIES OF THE WATER DEPARTMENT OF THE CITY OF PHILADELPHIA FOR 1859.

SEALED PROPOSALS will be received at the Office of the Department, 918 CHERRY Street, for the necessary IRON PIPE, IRON CASTINGS, BRASS CASTINGS, LEAD GASKET, COAL OIL and TALLOW, as will be required for the year 1859, until TUESDAY, February 8th, at 12 o'clock noon.

IRON PIPE BRANCHES, &c.

Such amount of Iron Street Mains (Branches, &c.) as may be ordered by the Chief Engineer. The metal to be of such quality as may admit of being readily drilled or cut, free from all imperfections, and cast from such patterns furnished at the expense of the contractor as the Chief Engineer may approve of. Each Pipe must be proved to a pressure of three hundred feet of water, and delivered to his order in the city free from all charges. The Pipe to be as follows:

3 inch pipe	in length of	9 feet	and weighing	130 lbs.
4 do	do	do	9 do	do	190 lbs.
6 do	do	do	9 do	do	310 lbs.
8 do	do	do	9 do	do	420 lbs.
10 do	do	do	9 do	do	490 lbs.

The amount required will be say about sixty thousand feet with the necessary Branches, Turns, &c. Pipe to be estimated for by the foot. Branches, Turns, &c., by the ton of 2240 lbs. The full average weight will be required, any Pipe weighing less than four per cent below the average weight will, in all cases, be rejected.

IRON CASTINGS.

Such Iron Castings as may be ordered by the Chief Engineer for Stop Cocks, Stop Frames and Covers; Fire Plugs, Cases, &c., to be delivered at the shop, 918 Cherry street. Amount required will be, say about 150,000 pounds.

BRASS CASTINGS

Such Brass Castings as the Chief Engineer may order for Stop Cocks, Fire Plugs, Ferrules, Plugs, &c; to be delivered at the shop, 918 Cherry street. Amount required will be, say about 6 000 lbs.

LEAD.

Such amount of Pig Lead as may be ordered by the Chief Engineer, to be delivered at the yard 918 Cherry street. Amount required will be say about 50,000 lbs.

GASKET.

Such amount of Gasket for laying pipe as the Chief Engineer may order, delivered at the yard 918 Cherry street. Amount required will be say about 5500 lbs.

COAL.

Such amounts of Anthracite Coal as the Chief Engineer may order for the use of the different works—

Say for Schuylkill Works, about 3500 tons
Do Delaware do do 2000 tons.
Do 24th Ward do do 450 tons.
Do Fairmount do do 60 tons.

The Coal to be delivered at the several works, and must be of the best quality lump or steamboat, and free from slate, bone, &c. Bids will be received for the supply of each works separately, and must state the kind of Coal to be supplied. The Coal will be weighed at the works when delivered by an agent of the Department. Estimates to be made per ton of 2240 lbs.

OIL.

Such amount of Sperm or Lard Oil as the Chief Engineer may order for the different Works, to be delivered at the several Works. Amount required will be, say about 800 gallons.

TALLOW.

Such amount of Tallow as the Chief Engineer may order for the use of the different Works. To be delivered at the several Works. Amount required, say about 2500 lbs.

The bids for the above Supplies must be endorsed, stating what they are for. The Chief Engineer reserves the right to refuse any article which is not in every respect satisfactory, or what it is contracted to be.

HENRY P. M. BIRKENBINE,
Chief Engineer.

ja25-tF17§

LEDGER AND TRANSCRIPT.

Philadelphia, Tuesday, Jan. 26, 1869.

LOCAL AFFAIRS.

THE WATER DUPLICATE FOR 1868.—The following statement of Mr. Keyser, Register of Water, shows the amount of water rent to be collected in the various wards during 1869, as compared with the duplicate of 1868:

Wards.	1868.	1868.
First	$25,446 75	$27,191 75
Second	29,220 50	30,096 75
Third	17,048 50	17,392 00
Fourth	18,115 25	18,536 50
Fifth	28,334 50	28,568 00
Sixth	36,006 30	36,241 55
Seventh	34,064 50	34,933 00
Eighth	34,667 50	35,627 00
Ninth	29,489 00	30,276 75
Tenth	29,742 75	30,066 75
Eleventh	18,556 00	18,713 75
Twelfth	19,249 25	19,411 25
Thirteenth	27,197 50	27,437 50
Fourteenth	30,753 75	31,026 75
Fifteenth	60,046 75	62,200 50
Sixteenth	22,073 00	22,086 75
Seventeenth	20,115 75	20,591 00
Eighteenth	25,614 00	27,334 75
Nineteenth	39,192 00	43,796 60
Twentieth	64,011 25	70,319 00
Twenty-first & Twenty-eighth	4,253 50	4,402 50
Twenty-second	10,131 50	11,052 00
Twenty-third	1,261 00	1,939 50
Twenty-fourth & Twenty-seventh	21,284 00	21,928 50
Twenty-fifth	5,355 25	5,849 00
Twenty-sixth	28,947 50	33,917 00
Total	$680,186 55	$710,933 40
		680,186 50
Increase		$30,746 90

Sept 30 1858

[For the Public Ledger.]

The Supply of Water and the Water Tax.

MESSRS. EDITORS:—I noticed that recently an attempt was made in Councils to tax the owners of property for water, whether taken by them or not. Would it not be more consistent and honest for them first to provide that all the works are put in order, *and that* [illegible] *fully*, and a full supply furnished to those that now pay for it? This is particularly the case in West Philadelphia, Twenty-fourth Ward. During the whole summer we have been without a regular supply, and within the past four weeks the supply has been so limited that, in the more elevated parts of the Ward, we have been left entirely without it. Upon complaint being made we have been informed that in consequence of the incapacity or neglect of the former engineers, the works were found by the present incumben's very much out of repair, but has not sufficient time elapsed since this discovery to put them in order? Who is to blame?

WEST PHILADELPHIA.

LOCAL AFFAIRS.

THE WATER SUPPLY—CONDITION OF THE WORKS.—The supply of water to the citizens continues to be limited, and the difficulty will not be fully overcome before the commencement of next week. This state of things is attributable altogether to the damage done to the works by the recent heavy rain storms, and the high tides in the Schuylkill which immediately followed, preventing the running of the pumps at Fairmount. To fully understand the difficulty which followed the storm, it is necessary for our readers to know the exact capacity of the works which supply the city. The works can pump each day as follows:

Fairmount	24,000,000 gallons.
Schuylkill or Spring Garden Works	8,000,000 "
Delaware Works	3,000,000 "
Twenty-fourth Ward works,	1,000,000 "
Total	36,000,000 "

Now, when it is considered that this amount of water is less by 7,000,000 gallons than is used at times in one day, it can readily be understood that any disarrangement of the works will so reduce the amount usually stored as to make the most economical use of the water necessary. The storage capacity of the works is as follows:

Fairmount,	4 reservoirs	$27,000,000 gallons.
Corinthian ave.,	1 "	40,000,000 "
Spring Garden,	2 "	9,000,000 "
Delaware,	2 "	9,000,000 "
Total		85,000,000

which is less than three days' mean average supply, or two days of the greatest demand, which reached in one day last year to 43,250,000 gallons. This demand then continued for three days, reducing the reservoirs about five feet.

On last Thursday two weeks our city was visited by the first heavy rain storm. It being local in its character, the freshet in the Schuylkill was not very great, but the washing away of the Reading Railroad embankment, near the Spring Garden Water Works, nearly filled the forebay of the works with sand, thus stopping for several days the supply of water from that source. Just as these works were again ready to commence operations the storm of yesterday week came on. This being more general in its character, a heavy freshet occurred, the same bank was again washed away, and the forebay at the Spring Garden Works filled to the top with sand and gravel. It was found on measuring this deposit that it amounted to 3500 cubic yards. A large number of men have been employed in removing the gravel since last Friday, but there is still three or four feet of it remaining. By cutting a channel through it the Chief Engineer has been enabled to start the Cornish engine, but cannot run it regularly. The reservoir connected with these works is about 16 feet deep, and yesterday there was but three feet of water in it.

The damage to the Spring Garden works would not, however, have affected much the supply of water had it not been for the unusual and almost unprecedented high tides in the Schuylkill, which flooded the wheel houses to the depth of six and eight feet, thereby stopping all the pumps, upon which the supply depended. This stoppage continued almost twenty-four hours, while the water stored was being drawn out. As soon as this difficulty had been overcome, and the wheels started, a break occurred to the lining of the Corinthian avenue basin, which prevented any more water from being pumped into it.

This break was fortunately discovered in time to prevent, perhaps, the entire destruction of the reservoir; and by having men employed night and day, the damage is nearly repaired. To prevent any similar disaster, a frame-work, 13 by 48 feet, filled with cement and bricks, has been constructed and placed inside the reservoir, in a position to receive the water as it falls from the 48-inch main, the mouth of which rests upon the top of the reservoir. A retaining wall of heavy stone is also being placed on the outside, where a large portion of the embankment had been washed away.

The Corinthian avenue basin holds water to the depth of 25 feet, but in consequence of the difficulties which we have enumerated, the quantity has been reduced to less than seven feet. By to-morrow all the repairs will be completed, when the work of again filling the reservoirs will be commenced.

It was in consequence of this state of things that notices were served on the manufacturers of the city to stop using the water until Monday next, and also cautioning our citizens generally to cease from washing pavements or wasting the water in any way. The notice was ordered to be sent to all establishments, but, by some oversight, a number of parties did not receive any word.

FAIRMOUNT.—The business of the Schuylkill Navigation Company has been resumed, and the boats are passed through the locks as fast as they arrive. Although there is no water passing over the dam, yet we believe the steamer now at work can keep the basins full of water pumped from below the dam.

The Chief Engineer seems to have profitted by the hints conveyed through the press, as we notice he has had a large scow built at Fraley's Fairmount dock, and has placed a dredge at the mud banks, opposite the forebay, so that we hope those unsightly objects will soon be removed.

SUNDAY DISPATCH.

PHILADELPHIA, MARCH 7, 1869.

Water Meters.

Frederick Graff, the Chief Engineer of the Water Department, in his annual report presents a matter which, before long, must assume a prominence in the public mind —and that is, What is the best method of charging citizens for the water which is furnished them from the city works? The present arrangement was sufficient for the time when the works could supply more water than was needed at any season. But of late years the consumption of the fluid has been so great in hot weather, that there has been danger at times that the reservoirs would go dry. Citizens are charged according to the number of hydrant, bath and wash-pave accommodations which they use. But there is no limit to the amount of water which they may draw, except the capacity of the pipes and faucets under their control. Hence there is annually wasted in Philadelphia an immense amount of the fluid. It is really becoming a question as to how the Department will be able to supply the necessary demand. In certain parts of the city it is difficult to obtain water at some portions of the day, whilst in others it is probably running to waste. Chief Engineer Graff suggests that the proper remedy would be the introduction of a water meter, and the graduation of charges according to the amount of water used. Such a system would create a thorough revolution in our domestic economy. People would think about guarding against extravagance in the use of water, as they do in relation to the use of gas. There would be more water for those who want it, and the Water Department would probably be better satisfied.

But, on the other hand, may there not be disadvantages attending the meter system? What will be the effect of enforcing upon the frugal mind the constant idea that every drop of water used costs something? Will there not be a decline in the number of baths used among stingy or poor people? When one understands that every time he washes his face there will be a charge against him, he may be inclined to be mean upon the subject, and may allow his countenance to remain dirty longer than it should. Would there not be a marked decrease in the use of water about many houses, yards, and pavements, which are now, in consequence of the abundance of the useful fluid, kept clean? What is to be the sanitary effect of diminished cleanliness of persons, and of an increase of dirt about our habitations and abodes? After all, the waste water finds its way into the gutters, which it helps to wash, and into the sewers, which are kept clean by the abundance of the flow. Even with dishonest contractors to clean our streets, and with a neglectful Highway Department, Philadelphia has, since the opening of the Schuylkill Water Works in 1800, suffered less from contagious and epidemic diseases than any other city in the United States. We have since that time gone through experiences of cholera and yellow fever, with less loss of life than in other cities. Are we not indebted for this comparative exemption from sickness and death to the abundance of our water supply? Can we expect to do as well when, by an avaricious plan, we are compelled to buy our water by the gallon? Would it not be better to spend any amount of money to furnish water to an unlimited extent for drinking, cooking, washing and bathing purposes to every citizen, than to risk the consequences of making water dear?

MEETING IN CONVENTION.

Mr. Wharton announced that they had met in Convention for the purpose of electing a Chief Engineer of the Water Works, and Commissioner of City Property. The following were the ballots:—

FOR CHIEF ENGINEER OF WATER WORKS.

For Henry B. M. Birkinbine	75 votes.
For Frederick Graeff	17 "
For Samuel Ogden	10 "

The President declared Mr. Birkenbine elected.

28

COMMISSIONER OF CITY PROPERTY.

For Jesse M. Christopher	74 votes.
For Eugene Ahern	21 "

The President declared Mr. J. M. Christopher elected.

Mr. Steeling, of the Committee on the Contested Election Case of the Twentieth Ward, submitted a lengthy report setting forth that the Election officers had not discharged their duties in accordance with the Acts of Assembly, and that from the unusually early hour at which the polls were opened, it was fair that there was a gross fraud—particularly in the 10th Precinct. The Committee threw out all votes, the names of which were not found on the Assessment, or not proved to be legal votes. They make the vote as follows:—

OUR CITY LETTER.

Our Water Supply and the New Store Reservoirs—a Curious Railway Difficulty—the Nicolson Pavement Injunction—the next Judge of the Common Pleas—the Scramble for the Row Offices.

PHILADELPHIA, August 26, 1867.

Seldom if ever has the great need of store reservoirs in Philadelphia to insure an unfailing supply of hydrant water been so felt as during the heavy rains of week before last, when the Spring-Garden works had their tunnel filled up with sand, the flow of water stopped, the works badly damaged and the Fairmount works could not pump for several days because the water was too high for the wheels and pumps to work.—As a consequence of this state of things the Chief Engineer of the water department became very much alarmed, and sent circulars to all the leading manufacturers and other great consumers of water, requesting them to be as economical as possible in the use of the water, as there was real danger that the supply would run short.—Similar requests were also made through the newspapers of the city to the citizens generally, and there can be no doubt that there was very good grounds for this solicitude. Yet when Mr. Birkinbine asked to enlarge the capacity of the proposed West Philadelphia reservoir from the original plan of forty millions of gallons to an aggregate of two hundred millions, there was a stupid outcry raised as though the money was to be squandered uselessly. We shall be obliged some time to build these store reservoirs, and the longer we put off doing so the more liable shall we be to such troubles as that which has just happened. We need these reservoirs also to enable the impurities in the hydrant water to subside before the water is sent through the pipes for use. At present every rain-storm gives us cloudy or muddy water. Any expenditure we may now make to provide ourselves with ample water storage will be judicious and praiseworthy.

A curious difficulty prevents the extension of the Thirteenth and Fifteenth streets horse railway out Broad street north of Columbia avenue

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☞ Water Supply to Germantown.

The Pool from which Germantown receives its supply of water is alarmingly low, and becoming depleted with such rapidity that it is possible Germantown will be left entirely without water in two or three days.

The most rigid economy is positively necessary, and is earnestly enjoined upon all the citizens supplied from Germantown Works.

FREDERICK GRAEFF,
Chief Engineer Water Dept.

se27 3t§

WATER SUPPLY TO GERMANTOWN.—The pool from which Germantown receives its supply of water is alarmingly low, and becoming depleted with such rapidity that it is possible Germantown will be left entirely without water in two or three days.

The most rigid economy is positively necessary and enjoined upon all the citizens supplied from the Germantown works.

FREDERICK GRAFF,
Chief Engineer Water Department.

Sept. 27, 1870. se27 3t

THE WATER SUPPLY.—The wrecking tug *Fuller*, with two seventeen-inch pumps, twenty-three-inch stroke, throws 1,393,920 gallons of water per day into the Fairmount basins, at a cost of $500. Four first-class steam fire-engines forced 1,728,000 gallons per day, at a cost of $200, were the city to pay for fuel and food for men.

THE WATER FLOWS.—The hubbub a few days ago made by residents of West Green street, in relation to the scarcity of Schuylkill water, was apparently raised as much in the interest of the model resident of that quarter, H. P. M. Birkinbine, the late inefficient engineer, as for any other purpose. There was a scarcity, caused by the stopping off of one of the mains while repairs were being done, and by the neglect of a stupid workman to turn on the water again. All this could have been remedied by a complaint made to the Chief Engineer. But the West Green street people, instead of adopting that simple plan, resolved to get up an indignation meeting and to denounce the Chief Engineer, without informing him of the stoppage of the water, and censuring him for incompetency because he could not anticipate or know that a laborer had been careless. Water flows in West Green street now, and, if the parties who were engaged in this flurry have any very great regard for themselves, they will feel rather ashamed of their precipitancy.

Erie Water Works.

The people of the thriving city of Erie, Pa., have been for years dependent for their supply of water on local wells, aided by an inefficient system of supply furnished by a limited and unreliable congeries of pipes fed by springs of small capacity. But it is soon to be supplied from the pure waters of Lake Erie, than which no better water for drinking, lavatory, or manufacturing purposes is in use. The plan, under the superintendence of H. P. M. Birkenbine, a well known Philadelphia engineer, is to erect on the shore of the lake an engine house and stand-pipe, the latter of sufficient hight to provide a head capable of supplying the most elevated portions of the city.

The *Erie Dispatch* says: "The stand-pipe rises 234 feet above the level of the water, and stands on a rock 14 feet high, making the pipe 220 feet high; it is five feet in diameter, and is made of boiler iron 3-16ths of an inch thick at the top and 7-16ths of an inch at the bottom; it weighs 42 tuns. This is to be surmounted by an ornamental spire of bright metal fifteen feet high. This is the highest pipe on the continent, and probably in the world. It was raised in a very novel manner, the invention of the contractor, and is well worthy of a patent. It was done very much as the Irishman proposed to build a chimney, 'hold one brick up and put another under it.' It was done by commencing with the top section and adding the lower sections in their regular succession, hoisting the pipe as each section was added, by means of derrick and pulleys.

"Around this pipe is to be built a tower nine feet six inches from wall to wall, and 190 feet high from the rock, surmounted by a balcony five feet wide. The balcony is reached by a spiral stairway of 250 steps. The stairway and pipe will fill the entire space in the tower. The tower will be of stone 22 feet, and the remainder of brick. The engines are of the Cornish pattern. Their cylinders are upright, and are 60 inches in diameter and 10 feet stroke. The cylinders themselves are of immense weight. The pistons work directly in connection with the pump rods. This connection is made in the lower or middle story. The pumps are in the basement story, placed directly under the engines. They are 2[illegible] inches in diameter and 10 feet stroke, and are capable of pumping 2,000,000 gallons eoch in 17 hours. Adjoining the engine house is the boiler house, which is 50 by 60 feet and one story high, made of brick. In this will be eight boilers, 30 feet long and 42 inches in diameter, with two 14-inch flues. They rest on brick and stone work, built up from the solid rock. Each boiler will be independent of the others, so the stopping of one will not affect the others. The fire will not be under the boilers, as is commonly the case, but will be in front of them, in combination chambers. The smoke stack is to be 100 feet high."—*Sci. Amer.*

COMMON COUNCIL OF PHILADELPHIA.

CLERK'S OFFICE, PHILADELPHIA, April 10, 1868.

In accordance with a resolution adopted by the Common Council of the city of Philadelphia on Thursday, the ninth day of April, 1868, the annexed bill, entitled "An Ordinance creating a loan for the extension of the Water Works, the purchase of League Island, and for building an Ice Boat," is hereby published for public information.

JOHN ECKSTEIN,
Clerk of Common Council.

An Ordinance creating a loan for the extension of the Water Works, for the purchase of League Island, and for building an Ice Boat.

Section 1. The Select and Common Councils of the city of Philadelphia do ordain, That the Mayor of Philadelphia be and he is hereby authorized to borrow, at not less than par, on the credit of the city, from time to time, one million six hundred and forty thousand dollars, to be applied as follows, viz: First. For the further extension of the Water Works, one million dolldrs. Second. For the purchase of League Island and property on the back channel opposite thereto, four hundred and eighty thousand dollars. Third. For building an Ice Boat, one hundred and sixty thousand dollars; for which interest, not to exceed the rate of six per cent. per annum, shall be paid half-yearly, on the first days of January and July, at the office of the City Treasurer. The principal of said loan shall be payable and paid at the expiration of thirty years from the date of the same, and not before, without the consent of the holders thereof; and the certificates therefor, in the usual form of the certificates of city loan, shall be issued in such amounts as the lenders may require, but not for any fractional part of one hundred dollars, or if required, in amounts of five hundred or one thousand dollars; and it shall be expressed in said certificates that the loan therein mentioned and the interest thereof are payable free from all taxes.

Section 2. Whenever any loan shall be made by virtue thereof, there shall be, by force of this ordinance, annually appropriated out of the income of the corporate estates, and from the sum raised by taxation, a sum sufficient to pay the interest on said certificates; and the further sum of three-tenths of one per centum on the par value of such certificates so issued shall be appropriated quarterly out of said income and taxes to a sinking fund, which fund and its accumulations are hereby especially pledged for the redemption and payment of said certificates.

RESOLUTION TO PUBLISH A LOAN BILL.

Resolved, That the Clerk of Common Council be authorized to publish in two daily newspapers of this city, daily for four weeks, the ordinance presented to the Common Council on Thursday, April 9th, 1868, entitled "An Ordinance creating a loan for the extension of the Water Works, for the purchase of League Island, and for building an Ice Boat." And the said Clerk, at the stated meeting of Councils, after the expiration of four weeks from the first day of said publication, shall present to this Council one of each of said newspapers for every day in which the same shall have been made.

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Chestnut Hill Reservoir, Boston.

The regular Boston correspondent of the San Francisco *Times*, writing of this great work says: "Few who have not traversed the circumference of this gigantic work have any adequate idea of the vastness of the undertaking. It is one of those projects which, when consummated, will prove an enduring crown of honor to the city of Boston. The immensity of the reservoir may be imagined from the fact that it contains a water area of 125 acres, the whole extent of the receptacle being 132 acres. To excavate to the required depth such a tract of land, and surround it with a wall that will absolutely prevent the leakage of water, would have been a herculean labor in other days, but now it is simply a question of time and money. The reservoir is divided into two basins, the smaller of which is expected to be ready for use some time during the next fall. In the preparation of the larger basin some obstacles have to be overcome which prevent a very rapid progress in this part of the work. Quicksands have retarded the building of the wall in a certain locality, but the orders to find a solid foundation are in process of fulfilment, notwithstanding the deep cut required for that purpose. There will be an average depth of eighteen feet of water in the reservoir when it shall have been filled, and the enormous amount which this would give when spread over a surface of 125 acres will readily be acknowledged. Six hundred men are employed upon the reservoir, and with their horses and oxen make a long train. It has been the purpose of the Water Board having charge of this work, to so construct it that there shall be no flaws or deficiencies therein, to cause the sweeping away of the walls and the flooding of the adjacent land, as has been the case in some other New England cities. When the reservoir is done, with the incomparable driveway, no citizen of Boston can help taking pride at the energy, comprehensiveness, and liberality which began and completed such a grand public enterprise. The work was begun about one year ago, and it will take some considerable time longer to complete it. The Boston Water Works, when the immense basin is finished, will be in all respects superior to anything of the kind in the New World, and if history is to be credited, will take a front rank with those of the ancients."

NO WATER IN THE TWENTY-FOURTH WARD.—We call the attention of the City Government to the unfortunate state of things existing at the Water Works in the Twenty-fourth ward. For the want of a small appropriation properly applied, a deficiency has existed for nearly a year in the machinery which supplies the stand-pipe with water, and, in consequence, scarcely a week has passed in which the people of the Twenty-fourth ward were not deprived of water sometimes for hours, sometimes for a day or more, to the great inconvenience of the female portion of the population, and to the imminent danger of explosions and loss of property and life, where cooking ranges, with boilers, are fed from the public pipes. The difficulty is said to lie in the valve which ought to shut off the water forced into the stand-pipe, and keep it from flowing back upon the works. This gave out, and instead of being promptly replaced with another that would do its work effectually, it has been patched up in any and every manner but an efficient one, and has leaked all the time since, and frequently so much that no head could be given to the water in the pipes.

In the last three weeks the people of the Twenty-fourth ward have been without water in the aggregate more than half the time, and for several days together.

With incendiarism so rife, with the midsummer upon us, when water for man and beast is doubly indispensable, with every engagement on the part of the city to supply water for which it has enforced payment in advance, such a condition of things is equally dangerous and disgraceful, and demands not only the prompt, but the thorough and effective attention of the proper authorities.

[For the Public Ledger.]

Insufficient Supply of Water—How Remedied.

MESSRS. EDITORS:—The citizens of the Twenty-Fourth Ward have, for some time past, been without a supply of water one half the time. This is not only a very great inconvenience to factory and house-keepers, but in case of fire would result in very serious loss. The causes of the frequent stoppages are, I think, these: First, the stand-pipe which holds a supply only sufficient to last about a half hour. Second, the imperfect construction of the engines and pumps which prevents them performing their duty with regularity. And lastly, neglect of those having charge of the works in not watching the height of water in the pipe for which there is an indicator in the engine room. A basin at Belmont has been recommended as a remedy, and it would no doubt be effectual, with good reliable machinery. This would, however, cost the city a large outlay, which, in her present state of finance, is objectionable. I will, therefore, suggest the erection at Fairmount of a stand-pipe and turbine wheel, the wheel to be of sufficient capacity to keep the pipe full at all times, and constructed to run at high tide and kept running constantly, the surplus water to be carried off from the top of the pipe into the Fairmount basins. An extra wheel would be required to guard against accidents, which when not otherwise employed, might be used for pumping into the basins. This plan would, I think, be a very great saving, as it will do away with the expenses of the present works.

B. F. D.

MEETING IN CONVENTION.

At 5 o'clock, the members of Select and Common Councils met in Convention for the purpose of electing the Heads of the Department. The ballot resulted as follows:—

Superintendent of City Railroads, A. Bartholomew; Commissioner of City Property, Jesse M. Christopher; Chief Engineer of Water Works, H. P. M. Birkenbine; Chief Commissioner of Highways, Joseph Shantry; Commissioners of Highways, John S. Rittenhouse and Edward C. Bonsal.

Messrs. Cuyler, Randolph, and Bartlett voted for Frederick Graeff for Chief Engineer of Water Works.

Mr. Dennis submitted the names of the securities of E. C. Bonsal, which were referred to the Committee on Finance.

Mr. Gamble submitted the names of the securities of Jacob Schantz, which were referred to the same Committee.

Mr. Houseman, of the Committee on Markets, submitted an ordinance extending the time of the occupants of the stalls in the Market Street Market, to the 1st of September next.

Mr. Bullock submitted a resolution requesting the Chief Engineer of Water Works, Mr. Birkenbine, to inform Councils whether any iron or brass rings, pins, or bolts have been sent from the City shop in Cherry street to the shop at Sixteenth and Hamilton streets, and whether any workmen have been sent from the former to the latter shop.

Mr. Justice said this was a *sneaking* and *mean* inuendo that there was something wrong—which was unbecoming Councils!

Mr. O'Neill asked if both of these shops belong to the city?

Mr. Bullock said not.

Mr. Eldridge said that the shop at Sixteenth and Hamilton streets formerly belonged to Mr. Birkenbine, but was now held by a *straw man*. It has been asserted that large quantities of iron and brass are conveyed from the Cherry street to the Hamilton street works, where they are manufactured into cocks, &c., and sold to the city at the engineer's own prices. Besides this, it is alleged that men are sent from one shop to the other, where they have worked from six to twelve days at a time.

After some further debate the resolution was adopted.

Mr. Bullock offered a resolution requesting the Controller to furnish a list of the bills paid to John T. Rich on account of the Water Works.—Agreed to.

Mr. Hazell submitted a resolution requiring the Committee on Schools to inquire into the pro- ... gymnasiums in the Public Schools.

The Trial of Turbine Wheels—Interesting Experiments.—The trial of turbine water wheels, at Fairmount, for some two months past, has been a very important one, and created a great deal of interest among the inventors and machinists who have had their wheels in the city. So far six have been experimented with. The one now on trial was sent from Texas. Two of the wheels are the invention of machinists in our own State; one is from New York, one from New Hampshire, and one from Massachusetts. The wheels undergo over twenty different experiments, so as to fully test their capability for the work for which they are intended. Each wheel is of sufficient capacity to discharge 200 cubic feet of water per minute, under a head of six feet. The wheel is tested by raising a weight of from 500 to 1200 pounds, 25 feet high. It is then held stationary and the water allowed to pass through it, so as to calculate the amount of water that passes through it. The wheel is also allowed to run free without any weight, so as to test its capacity when in this condition. Notwithstanding inventors have been under heavy expenses while making these experiments, the results have been so satisfactory and interesting to them that the cost has been forgotten in the great good that is likely to flow from the trials of the various wheels. Much valuable information has been elicited, which, when published by the Committee, after adopting one of the wheels, will be of great service to all persons engaged in the erection of water works.

A Fine Store.—We recently noticed some very handsome improvements in the neighborhood of Eighth and Walnut streets, since which Messrs. Robert Donnell & Son have completed on Walnut, above Eighth, one of the handsomest and best appointed first-class Grocery Stores in this or any other city. By devoting the whole building to their business, the Messrs. D. are enabled to separate the several branches to the great convenience of purchasers. Such establishments are a credit to the city and worthy special commendation.

Alleged Street Obstruction.—Joseph Brady, a

Most Wonderful.—The newspapers of the past week announce the very important information as "something new under the sun," that a spring had been found in the rock at Fairmount. Some of the papers did not impart to the readers thereof what kind of a spring, and therefore, our curiosity was excited on the subject. On proceeding to the romantic spot, we found the spring to be one of water, gushing out from its dark recesses in all its crystal purity and coolness. This was considered to be something entirely new, but if the reporter had referred to an ancient document which most of them seem to know nothing about it, he could have ascertained that long ago it was discovered that the rock abounded with springs. This one was brought to the light of day by the laborers blasting the rock. We understand that the Watering Committee will have the spring so improved by art, that all the visitors to the classic headwaters of Philadelphia may have an opportunity to slake their thirst with a first-class "Fairmount cocktail;" very suitable in these days of temperance.

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to be of good behaviour.

Water Meters and Drinking Hydrants.—The Committee on Water of Councils met on Tuesday afternoon, for the purpose of examining a new water meter, and plans for drinking hydrants. The water meter submitted to them for consideration, is an English invention, intended to prevent waste, and obviate vexatious controversies with the customers of the Water Department, respecting the quantities of water they should be charged for. This meter is termed a high pressure. The water passes through a funnel down into the measuring drum, and in passing outward through the curvilinear channels of the drum, causes it to revolve. Above the drum is a counter, divided into a lower chamber, filled with oil, and containing the reducing wheels and an upper chamber, with glass top plate, containing the dial and hands. The first condition the measuring drum has to fulfil is, to produce the same number of revolutions for a given quantity (say a gallon) of water passing through. The power of a jet of water by impact or reaction increases, however, in the ratio of the square of its velocity, and consequently the drum has the tendency to revolve proportionally faster when comparatively large quantities of water are passing through. The dials upon the meters are similar to those used for counting the consumption of gas, the difference being that the dials revolve, instead of the hand indicating the amount used. The dials are arranged to count as high as ten millions of gallons. Among the advantages claimed for these meters are, that it prevents the consumer from being overrated, and also, if properly arranged, will detect all waste going on in the companies' mains. The committee have agreed to place one of these meters in a large manufacturing establishment, for the purpose of testing its utility.

The committee had also six plans for drinking hydrants submitted to them, but none of them were adopted. The whole matter was referred to the Chief Engineer of the Waterworks, for the purpose of making a report upon the plan sent in.

A Large and Influential Meeting of the citizens

Important to the City.—Since Councils have determined to increase the capacity and effectiveness of the water works at Fairmount, by the erection of additional wheels at the mound dam, the Schuylkill Navigation Company have endeavored to induce the city to enter into a contract with them, before the work is commenced, so that the Company might have something to say in reference to the water to be taken from the Schuylkill. The present Chief Engineer has protested against any such acknowledgment, and his views have been concurred in by the Committee on Water of Councils, for the reason that the building of the wheel house along the mound dam does not interfere with the dam across the river, the only thing the Schuylkill Navigation Company is interested in; also, that when the city first entered into a contract with that company there was but one lock at the terminus of the canal below the dam, but since, two have been erected, both of which are much larger than the original lock. The city, under the original contract, was allowed to have all the water in the Schuylkill, except that necessary for the use of the Schuylkill Navigation Company; and, therefore, as the locks have been enlarged and the dam raised, more for the benefit of the canal than the city, the Chief thinks that no other contract should be entered into with the company, as the improvements to be made cannot in any way interfere with any of their rights or privileges. The work at the mound dam will, therefore, be commenced as soon as the water is low enough to allow of the laying of the foundation, and if the present Chief Engineer, who has shown himself active and efficient, should be continued by Councils, the work will be vigorously pushed.

Lehigh Canal Trade.—Shipped for the week ending May 14, 1859:

Birkinbine and his Axe.

The Chief Engineer of the Water Departmen has amused himself by decapitating two of his assistants. A Mr. BARRY was his first victim. His last, Mr. GARRETT, who alleges, as the reason of his taking off, the fact that he testified to the truth in the case of the former. Of course it is difficult to get at the exact fact of the matter on either side. Employees are loth to unfold all or even a good part of the secrets of their head, while the aggrieved are apt to picture their grievances, with all the adjuncts of extra coloring and masterly touches. Select Council, we observe, has determined by a unanimous vote to ascertain the truth, as nearly as possible; but it will be a long while—inasmuch as Councils have taken a six weeks recess—before the jewel will be brought from the bottom of the well in which it is hidden. It is a trite and true saying, that where there is smoke there is fire; and we are beginning to believe that everything is not altogether "on the square" at the Water Works at the present writing.

Sunday ... 1859

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stalls therein.

Fairmount.—The plot of ground on the north side of the reservoir at Fairmount begins to present a very beautiful appearance. The large fountain, 100 feet in diameter, has been completed, by erecting sodded walls around the basin which will be used until Councils make an appropriation for the erection of granite walls and other adornments. A temporary jet has been placed in the fountain, and, at a trial a few days since, the water was thrown nearly sixty feet in height. The Chief Engineer intends placing in the fountain a variety of jets, so that from one to four streams may be thrown at will. In completing this, as well as the Fairmount Park improvement, Councils should erect iron fences around them, particularly at Fairmount Park, instead of the miserable wooden one about going up at this place, and which will soon be destroyed.

Apr 25/59

Almost a Chance for Swindling ...

[For the Public Ledger.]

Mr. Birkinbine and the Re-Appointment of Mr. Garrett.

EDITORS PUBLIC LEDGER:—Gentlemen: In your local column of last Saturday, alluding to the action of Councils in recommending to Mr. Birkinbine the re appointment of Mr. Garrett and myself to the situations from which we were so summarily discharged by that gentleman, you say, in substance, that "Mr. Birkinbine will not be likely to take any notice of the matter, as he claims to have discharged us for good and substantial reasons." Now, as I presume you wish to publish the truth, and not error, permit me to correct you in this particular. Mr. Birkinbine did assign five reasons for my dismissal to the committee who were appointed by Councils to investigate the matter; but they were all proven, to the entire satisfaction of the committee, to be mere subterfuges or positive falsehoods, and so reported by the committee unanimously. In Mr. Garrett's case Mr. Birkinbine has refused to assign any reasons whatever, thus treating the committee and Councils with contempt. By publishing the above, you will aid the truth, and oblige

Yours, respectfully, JOB R. BARRY.

Ledger 12 Sept/57

A NICE MAN.—A Committee of Councils has been investigating a complaint made against Mr. Birkinbine, the Chief Engineer of the Waterworks, who had discharged Mr. Job R. Barry, the Engineer of the Fairmount Works. The latter complained to Councils. The committee to investigate the matter declare that Birkinbine's conduct was tyrannical and mean. The sole cause of the discharge of Barry was envy of the superior mechanical talents of the latter, who had invented "an airing apparatus" for working the pumps, superior to anything that Birkinbine could do, although he concealed Barry's invention and endeavored to take the credit to himself. The committee sustain these facts in toto. The report proves that this good Christian Birkinbine, who is too pious to allow the fountains to play on Sunday, was actuated in his conduct to Barry by envy, spite, uncharitableness and unchristianness. Had this report been made three weeks ago, Birkinbine would not have been re-elected.

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for the Company.

Apr 14/55—

The Water Works.—The water has been let off from the south basin attached to the Kensington Water Works, for the purpose of having the mud removed from its bottom. The north basin was cleaned last fall of some nine inches of black mud, and about the same amount will have to be removed from the south one. This cleansing, at this time, will, it is thought, prevent the water from becoming offensive in warm weather, as has been the case for several summers past. The Schuylkill Navigation Co., after investigating the contemplated improvements at the Fairmount Works, have withdrawn all objections to the erection of the mill-houses along the mound dam, and, as soon as the Committee on Water approve of the plans, the work will be commenced. These houses will contain two Turbine wheels and four pumps, thus greatly increasing the capacity of the Fairmount Works. The laying of the 30-inch water main along Broad and other streets, so as to afford a better supply of water to the residents in the lower section of the city, will be commenced next week, a large quantity of the pipe contracted for being now ready for delivery.

A New Patent Rudder.—There has been recently

Water Pipe.—The thirty inch water main, which is to supply the lower section of the city is now laid down Broad street, near Race. At this point the trench is dug 12¼ feet, so as to pass the pipe under the culvert. The general depth of the ditch is eight feet. Each section of this pipe is 12 feet long, and weighs from 3850 to 4160 pounds. The entire weight of the main, from the Reservoir at Fairmount to Prime street will be about 3000 tons, and the cost over $100,000. The work of laying the pipe along each side of the main street in Frankford has been resumed, and will soon be completed. The citizens of Frankford are very anxious to obtain a better supply of water than they now get from their pumps and wells.

The Trial of Turbine Wheels.—The Committee on Water and the Chief Engineer have fixed upon the first of August for the trial of Turbine Wheels, two of which are to be placed in the new mill house, to be erected alongside of the mound dam. Letters have been received from about twenty five inventors of Turbine Wheels, and it is expected that models of at least one half this number will be brought to the city, so as to compete for the job of placing them at Fairmount. This action of the Department will have a tendency to stimulate inventors, and also insure to the city the best and most effective kind of wheel for this location.

The Improvements at Fairmount.—The blasting of the rock at the foot of the basin, at Fairmount, near the head gates, is for the purpose of making a walk by which persons can ascend or descend from the top of the embankment with perfect ease, and at the same time leave the rock in a state to correspond with other portions of the embankment. The blasting of the rock has been for this purpose only, and not to obtain stone for building purposes, as many have supposed. The improvement will be a great convenience to all persons desirous of reaching the top of the reservoir at this point.

Ledger 26 May/59

WE learn that Frederick Graeff, Esq., is a candidate for the appointment of Chief Engineer of the Water Department of the City. We will only add that Mr. Graeff is a worthy and an energetic gentleman, and thoroughly experienced in the duties of the office which he seeks to fill.

Model Turbine Wheels—Wheel House, &c.—Some time since the Committee on Water, of Councils, invited the inventers and constructors of Turbine water wheels, to compete for the erection of two at the new wheel house in course of construction at Fairmount, and that working models would be required to be sent to this city for trial before any contract would be given out. Letters were received from engineers in various parts of the country of their intention to send models as soon as they could be constructed, and two have already been sent on, one from Reading, Pa, and the other from New Jersey. Each will weigh about 1500 pounds, and are capable of passing 200 cubic feet of water per minute. As soon as the other models arrive, the trial will take place at Fairmount, works having been already constructed for this purpose. The coffer dam, so as to allow of the construction of the foundation for the new wheel house, is now completed, and a direct acting steam pump, built by Mr. Rich, at Sixteenth and Hamilton streets, to work for the purpose of keeping it clear of water. Mr. Rich has also one of his pumps in operation at the big culvert, now building in Twenty fourth street, and with its aid the workmen are enabled to continue their operations without interruption.

Patent Ventilating Hat.

Fairmount.

To the Inquirer:—I am a frequent visitor to the Fairmount Water Works and to the new Park now being laid out, and have observed with sorrow the great pains which some one is taking to disfigure the Basin and grounds, by blasting away the rocks which support the embankment. I have been informed that a large sum of money is to be spent to improve the place and to add to its natural beauties, and yet the most ornamental portion of the Park is thus ruined by the folly or cupidity of somebody. Is there no way to stop this? I am certain our members of Council cannot be aware of what is going on, or there are enough gentlemen of taste in that body to secure us from such vandalism. It is, I take it, a legacy from their Loco Foco predecessors, for no man pretending to represent the PEOPLE could be found to consent to such a shameful proceeding. It is a matter of general complaint, and I hope somebody authorized to act, will take the matter in hand and save the ROCKS.

[For the Public Ledger.]

The Schuylkill Water Works.

MESSRS. EDITORS:—Your correspondent "Bung" of yesterday utters the sentiments of thousands, I have no doubt. It seems of very questionable necessity, to say the least, that the beautiful walk at Fairmount is to be destroyed, and the grand view southwardly entirely cut off by the construction of wheelhouses. Neither can the people understand why, to save a few dollars, the massive natural buttress of rocks on the north side of the basin, and which are a part of its foundation, are being blasted away.

In an address lately delivered by one of our most eminent preachers, was the remark that "we are the most wonderfully patient community that he ever knew." And the fact is patent. We see the truth of it all around us, every day, in our toleration of assumptions of authority and abuse of power; and by neglect of and indifference to the performance of duty by those holding office. Irresponsibility seems to cover them as with a shield. Things have not improved since consolidation. And besides, the public seem to have no time to bestow in the correction of these things. The great race after the *dollar* has to be run, and what are all other considerations when compared to this? But is it to continue so?" Let us hope not, at any rate. W.

May 27/59

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will have accommodations for about one hundred and fifty inmates.

May 20 1859

Inspector of Fire Plugs.—That there has been wanting in our City, ever since consolidation of the districts, an Inspector of Fire Plugs, has been apparent to every one who knows anything of the workings of Philadelphia. Since the present Chief Engineer (Mr. Birkinbine) entered upon his official duties, nearly a year ago, he has, by the assistance of Mr. White, the Register of Water, made a number improvements that not only redound to the credit of the Department, but give entire satisfaction to the people. The Inspector of Fire Plugs, Mr. C. McCormack, of the Second Ward, recently appointed, will have an onerous duty to perform. It will be his duty to see that all fire plugs are properly closed after fires; to see that all of them, in every part of the City, are kept from leaking; and to prevent a lavish use of the aqueous fluid in washing pavements. The action by the Department is every way commendable, because it will be one of the means to insure a better supply of water in private bath-tubs, and for other domestic purposes, at all times.

☞ SHOULD JUSTICE BE DONE AND RIGHT VINDICATED?—There will be a meeting of the friends of Mr. J. R. BARRY, late as Engineer at the Fairmount Water Works, THIS (Wednesday) EVENING, July 6th, at the SPRING GARDEN HALL, to express their sentiments with regard to the manner he has been treated by the present Chief Engineer of the Water Department, Mr. Birkinbine. Mr. Barry will be present and make a full statement of the facts of the case, and explain and illustrate by diagrams his self acting airing apparatus; also, Mr. Birkinbine's attempted improvement. Mr. Barry's friends and fellow craftsmen are invited to attend.

Joseph Longshore, M. D., Land Sartain, Wm. Otley, George W. Boyd, J. Fulton, F. Coggins, E. Brooke, H. Bowden, J. M. Benckert, Geo. Hollingsworth.

July 6th 1859

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The Water Department.—The laying of a 12-inch water pipe from the Kensington Water Works to Harrison street, Frankford, has been commenced, and will be completed about the first of July, at which time the people of Frankford will be enabled to obtain what they have long needed—a full supply of water. The laying of the 20-inch pipe, to connect with the 30-inch main, to be laid in Broad st., has also been commenced, and the whole work, it is thought, will be completed in July. It is estimated by the Chief Engineer of the Water Works, that this 30-inch main will afford an ample supply of water for 250,000 people south of South street. The main will not be tapped north of South street. The work of raising the reservoir at Corinthian avenue and Poplar street has also been commenced, and will be pushed vigorously the present season. The blasting of rock at the Fairmount reservoir, so as to improve that portion which extends towards the dam, is carried on early in the morning, so as not to interfere with the visiters to that delightful spot.

Property owners who have failed to pay their bills at the Register's Office for the coming year, can now have an opportunity of doing so, without difficulty, as the clerks have plenty of time to wait upon customers. Those who failed to pay before the 1st of April, have had 5 per cent. aded to their bills. If unpaid after the 1st of July 15 per cent. will be added.

90

BIRKINBINE REPROVED.—The Watering Committee of the City Councils have very sensibly exercised their authority over the affairs of the department, and have commanded the "unco guid" Birkinbine to allow the fountains at Fairmount to play on Sunday. The committee is composed of practical men, without any "bi-got nonsense about them." They do not understand that it is their business to compel obedience to the sectarian notions of certain persons, at the expense of others who do not hold such opinions. Mr. Birkinbine has been lucky enough to be re-elected notwithstanding that a much better man, Frederick Graeff, was a candidate against him. He can yet win for himself credit by a faithful attention to his duties. He was not elected to do missionary service on the part of fanatics and narrow-minded people, or to transfer the Water Department into a college of the *propaganda fide*. Let him attend to his own business and make himself no longer ridiculous by attempts to subvert his office to sectarian ends.

IMPORTANT INJURY AT FAIRMOUNT—SCARCITY OF WATER EXPECTED.—On Friday last two of the pumps at Fairmount, Nos. 3 and 4, burst. By this event (we shall not call it an *accident*) the works will be severely crippled for some time, until the pumps can be replaced. The cause of the explosion was that the air-chambers of the pumps were not supplied with air. At the time of the catastrophe they were fitted up with Mr. Berkinbine's newly invented airing apparatus. This contrivance, it will be recollected, was gotten up by Birkinbine to replace the patent airing apparatus invented by Mr. Barry, which had worked successfully. The latter, who was assistant engineer, was discharged by Birkinbine for daring to claim his own invention. This fact was brought out before the investigating committee of Councils. Two weeks ago Mr. Garret, another assistant engineer, who had been in place for seven years under Mr. Graeff and others, was also discharged, because upon the hearing of the complaint of Mr. Barry against Birkinbine he (Garret) was called to give testimony which was true, but which very truth proved the tyranny and oppression of Birkinbine's actions. For telling the truth Garret was discharged. The Fairmount works were therefore left without any competent person to manage them, and hence a disaster which will cost the city a good deal of money, and put citizens to great inconvenience by decreasing the supply of water at the time of year when it is most wanted.

The Water Works.—For the purpose of cleansing the bottom of the south basin of the Kensington Water Works, the water has been let off. The north basin was cleansed last fall of some nine inches of black mud, and about the same amount will have to be removed from the south one. This cleansing, at this time, will, it is thought, prevent the water from becoming offensive in warm weather, as has been the case for several summers past. The Schuylkill Navigation Company, after investigating the contemplated improvements at the Fairmount Works, have withdrawn all objections to the erection of the mill-houses along the mound dam, and, as soon as the Committee on Water approve of the plans, the work will be commenced. These houses will contain two Turbine wheels and four pumps, thus greatly increasing the capacity of the Fairmount Works. The laying of the 30-inch water main along Broad and other streets, so as to afford a better supply of water to the residents in the lower section of the city, will be commenced next week, a large quantity of the pipe contracted for being now ready for delivery.

WILL MR. BIRKINBINE EXPLAIN?—What is the reason that the fountains at Fairmount are not permitted to be played on Sunday? Is the Water Department of the city to become an appendage of the Y. M. C. A.? If so, why not carry out the thing at once and close the gates? As long as they are open, the spouting of a little water will not add much to the sins of the community. We hope that this stoppage of the fountains is accidental, and not premeditated. Let us not have any of this Puritan nonsense about the management of the affairs of the city. If the People's party attempt to sectarianize our citizens, they will find that the experiment "will not pay."

Dispatch May 15/59

"Notice to Quit."

The caucus of the People's party last week, after nominating Police Magistrates and candidates for several important positions, rejected by a very decided vote a resolution declaring it inexpedient to change the heads of the Highway, Water, City Property and other departments. There is a marked significance in this action. It is a notice to Messrs. Andress, Birkenbine and Christopher to vacate their stools—to quit. Nor is there likely to be any very lasting regret in parting with these officials. They have all shown the most censurable inefficiency, and a lack of all proper qualifications for their positions. The streets of the city were never so disgustingly filthy as Mr. Andress has allowed them to become: and he sinks under the responsibility of the most culpable neglect of official duty. Mr. Birkenbine, also, in his management of the Water Department, has utterly failed, as many predicted from the first. He lacks both the energy and the scientific knowledge requisite for such a position, and has only verified the appropriateness of the designation, "the Birkenbine folly," applied to a monument on the west bank of the Schuylkill, which some ignorant people have fancied was once designed for water-supply purposes.

Mr. A. W. Juvenal, Agent of the Girard Estate, has also been served with "notice," and in his case a successor is already named—Mr. Jacob Scheetz. But Mr. Juvenal does not choose to retire. He is lawyer enough to put in the plea of "surprise," and we believe the plea a good and true one; for his friends were profoundly ignorant of the purpose of Mr. Scheetz or any one else to "horizontalize" him. Moreover, one Chamber at least, has shown a disposition to entertain Mr. Juvenal's plea, and Mr. Sheetz was not elected on Thursday, as was designed. There may, and probably will be, still other evidences of insurrectionary feeling before the full programme is gone through with.

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ing, was saved.

The Water Works.—Since the lower section of the city has been supplied with water through the new 30-inch main, the capacity of the Works at Fairmount has been pretty fully tested. Most of the wheels have to be kept in constant motion, to keep the reservoir filled with its usual quantity. Several of the wheels at these works are in a rotten condition, and will shortly require renewing. The Spring Garden Works have been so connected with the Fairmount and Kensington Works, that water can be supplied to all portions of the city while repairs are being made at Fairmount. The Spring Garden Works are now in perfect order, two new boilers having been put in the engine-house, and the machinery repaired, so that their capacity is almost equal to the Works at Fairmount. The Clerks at the Register's Office are now busily engaged in making out the duplicates for 1860, and the books will be ready in time to allow our citizens to pay their water rent on the 1st of January. The amount of assessment will be considerably increased over that of the present year, in consequence of the large number of new buildings erected, and the extension of water mains and pipes.

Dec 13/59

Fatal Railroad Accident.—On Saturday evening,

Exhibition of Working Models.—Mr. Parker, Chairman of the Committee on Water of Councils, has had passed a resolution requiring competitors who may desire to furnish the two Turbine wheels for the extension of the Water Works at Fairmount, to have their models in this city by the first of next month, so as to test their usefulness and power. Each model is to be of sufficient capacity to discharge 200 cubic feet of water per minute, under a six foot head. The trial will take place in the presence of the Committee and the Chief Engineer. The building of the head gate, and house for the accommodation of the Turbine wheels, will be commenced in about two weeks.

Water for Frankford.—The twelve inch water main being laid from the Kensington Waterworks out the Frankford road, to supply the citizens of Frankford with water has been extended as far as the bridge at the foot of the main street in that borough, so that the completion of the work by the first of July is made certain. The citizens of Frankford, who have long been put to great inconvenience for the want of a full supply of water, are quite elated at the near consummation of their hopes, and it is probable a suitable demonstration of joy will be made by them early next month, perhaps on the Fourth.

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unknown, but it is attributed to accident.

A New Fire Plug.—The introduction of steam fire engines into the fire department has developed mechanical genius and ingenuity to supply the wants of the new apparatus. The large quantity of water which they consume has stimulated more improvements in fire plugs than in any other description of machinery. The last invention is one by Mr. A. C. Jones, of this city. He claims, as its advantages, that the increased size (8-inch) and easy, curved form of the unobstructed bore, gives free passage for water from the street main to the nozzles. It will not occupy more space on the sidewalk, and will be much lower than other plugs. The large valve can be opened or shut with ease, by pulling or pushing a handle. The valve closes rapidly and firm, after the handle is touched, which prevents it from leaking, as is often the case with screw valves. All the parts worn out or needing repairs can be examined and renewed without breaking the ground around the plug. The portions working in water are three feet below the ground, rendering it safe from the frost. It is claimed that it is not liable to get out of order, and the more it is used the better. Its use will dispense with much hose, by concentrating a supply of water near the fire. It is arranged to supply two steam fire engines and three hand engines, or five hand engines, at the same time; and the inventor claims that it can be so firmly fixed in the ground as to resist the shocks caused by the steam pumps. It was submitted to the meeting of delegates from the steam fire companies, at the Hibernia Engine Company's hall, on Wednesday evening, and all present signed a petition to City Councils to have one put down in front of Independence Hall, on Chesnut street, for the purpose of testing its qualities. The inventor proposes to do this, if permission is given him. At present there is but one plug in this square, and on several occasions there have been large fires in close proximity to the old hall, which renders the precaution of putting down a plug of this character in that vicinity a wise and prudent measure.

Statement of Imports at Philadelphia from foreign ... ending March 3, 1857.

An Old Claim Revived.—The present dam at the Fairmount Water Works was commenced in 1819, and the works were put in operation in 1822. In the construction of the dam a large amount of low land along the west side of the Schuylkill, and now opposite Mantua Village, was overflowed, and portions of it have since been used by the Schuylkill Navigation Co. A claim was set up at that time for land thus overflowed; but now the Canal Company desire to extend their canal out to the former low water mark, some 200 feet outside of the present boundaries, and the heirs of Judge Peters are about making a proposition to Councils to purchase this land, which has been overflowed nearly forty years, so as to prevent the Canal Company from using it, and thereby deprive the city of a large amount of water, which in summer is not now too great. The question as to who has the right to this supposed low water mark which has so long been hidden beneath the raging waves of the Schuylkill *Canawl* will be a nice one to determine, and no doubt will take a long while to settle. The heirs of Judge Peters, we understand, claim the ownership of it, and claim the right to fill it up at such times as may suit their convenience.

The alarm of fire yesterday about noon,

[For the Public Ledger.]

The Fairmount Water-works.

164

MESSRS. EDITORS—In your paper of Monday last, you notice the fact that there is about to be erected at Fairmount a new building for Turbine wheels, which are said to be needed to increase the capacity of the water. Now, while I do not deny the necessity which exists for increasing the means of supply, I do deny that there is any necessity for erecting new buildings, and thus marring the beauty of that portion of the grounds which extends out to the head of the dam. All that is really needed is to remove, by degrees, the clumsy old wooden wheels at present in use, and to replace them by Turbines, which would occupy only about one third the space, and would give more than the required increase of supply. This course seems so simple and apparent, that I cannot conceive of the motive which prompts this unnecessary outlay of money in the erection of new buildings. To make the change still more annoying, they have set to work to quarrying away the rocks around the basin, which formed one of the most beautiful ornaments of the place, just at the time that the public were led to believe that Fairmount was to be adorned with an ornamental Park, and when Councils are expending money for that purpose. Of course, it saves the cost of stone, but this mode of spending money in unnecessary buildings and saving the price of the stone, is, I take it, a good exemplification of our time-honored policy of "saving at the spigot and letting out at the BUNG."

318

WILSON'S
First Premium
ELECTRIC GAS LIGHTER.

GOLD MEDAL RECEIVED AT THE LATE FAIR OF THE AMERICAN INSTITUTE.

PATENTED AUGUST 16, 1859.

The only instantaneous, simple, reliable and economical method ever offered to the Public for the lighting of Gas in Streets, Public Buildings, Private Residences, Churches, Factories, Places of Amusement, &c., &c., and the only plan in which the

ELECTRIC SPARK

is applied to such a purpose.

All the difficulties which are sure, sooner or later, to arise in the use of the heated platinum wire, are overcome by adopting the Electric Spark generated by the Inductive Apparatus used, in connection with a few small cups of Smee's Battery—four or five such cups, with an Inductive Coil, being sufficient to light 10,000 burners at the same moment. With this arrangement, a few small cups will do the work of *as many hundred applied to the heating of platinum wire.* The only part that can wear out is the battery: and as 500 pairs of plates, other things being equal, wear out just as soon as one pair, by such a reduction in the number of plates used, we almost annihilate the expense of keeping the battery in operation when once applied.

By this method, which depends upon breaks in the circuit, we also avoid the extreme care which is required in the old wire heating process, to preserve an unbroken metallic circuit—the least possible break under that process being sufficient to stop all action till the break is repaired; and these breaks are extremely liable to occur from an *overcharged battery*, or from want of entire *uniformity* in the length, thickness, or quality of the wire to be heated. This invention does away with the use of matches or torches about a building, thereby greatly enhancing its security against fire, and puts the control of the gas into the hands of a single clerk, so that without leaving his seat he can let on, ignite, and shut off the gas in any room, story or building, or all at once, at pleasure.

A careful examination of the merits of this WONDERFUL INVENTION is solicited, feeling confident, as we do, that its superiority is so great that the most sceptical will be convinced.

ALSO,

WILSON'S INSTANTANEOUS MAGNETIC VALVE,

for letting on and shutting off the gas by Electricity. It is guaranteed to infringe no patent ever issued; is perfectly reliable, and can be operated with much less battery-power than the ground stop-cock.

ALSO,

WILSON'S PATENT VIBRATING ELECTRIC CONDUCTOR.

The only plan ever offered to the public by which the heated platinum wire can be made reliable.

Orders received, and Patent Rights for sale, by

D. A. HEALD, 112 & 114 Broadway, or
ARCH. WILSON, 4 Wall Street,
NEW-YORK.

VOL. XIII. NEW YORK, MAY 29, 1858. NO. 38.

THE
SCIENTIFIC AMERICAN,
PUBLISHED WEEKLY
At No. 128 Fulton street, (Sun Buildings,) New York,
BY MUNN & CO.

O. D. MUNN, S. H. WALES, A. E. BEACH.

Responsible Agents may also be found in all the principal cities and towns in the United States.

Sampson Low, Son & Co., the American Booksellers, 47 Ludgate Hill, London, Eng., are the British Agents to receive subscriptions for the SCIENTIFIC AMERICAN.

Single copies of the paper are on sale at the office of publication and at all the periodical stores in this city, Brooklyn and Jersey City.

TERMS—Two Dollars per annum.—One Dollar in advance, and the remainder in six months.

☞ See Prospectus on last page. No Traveling Agents employed.

Steam Fire Engine.

There are very few persons in a community who have not, more or less, partaken of the intense excitement and sympathy always consequent upon fires taking place in their midst; and it is not strange, therefore, that a large amount of thought should be expended toward their prevention and extinction. In view of their frequent occurrence in this country, and the vast amount of property annually destroyed in this manner, it becomes the duty of every good citizen to exercise his mind and skill, and endeavor to avert and remedy this terrible evil, and to encourage the efforts of others to these ends. Of late years the attention of inventors has been directed to the application of steam to the suction and forcing of water in fire engines; and many powerful fire engines worked exclusively by this force are in successful operation in many of our western cities.

Our engraving represents a side elevation of a compact form of steam fire engine, manufactured by Silsby, Mynderse & Co., which is a modification of the plan and arrangement of the parts of the one previously manufactured [illegible] which was illustrated in No. 10,

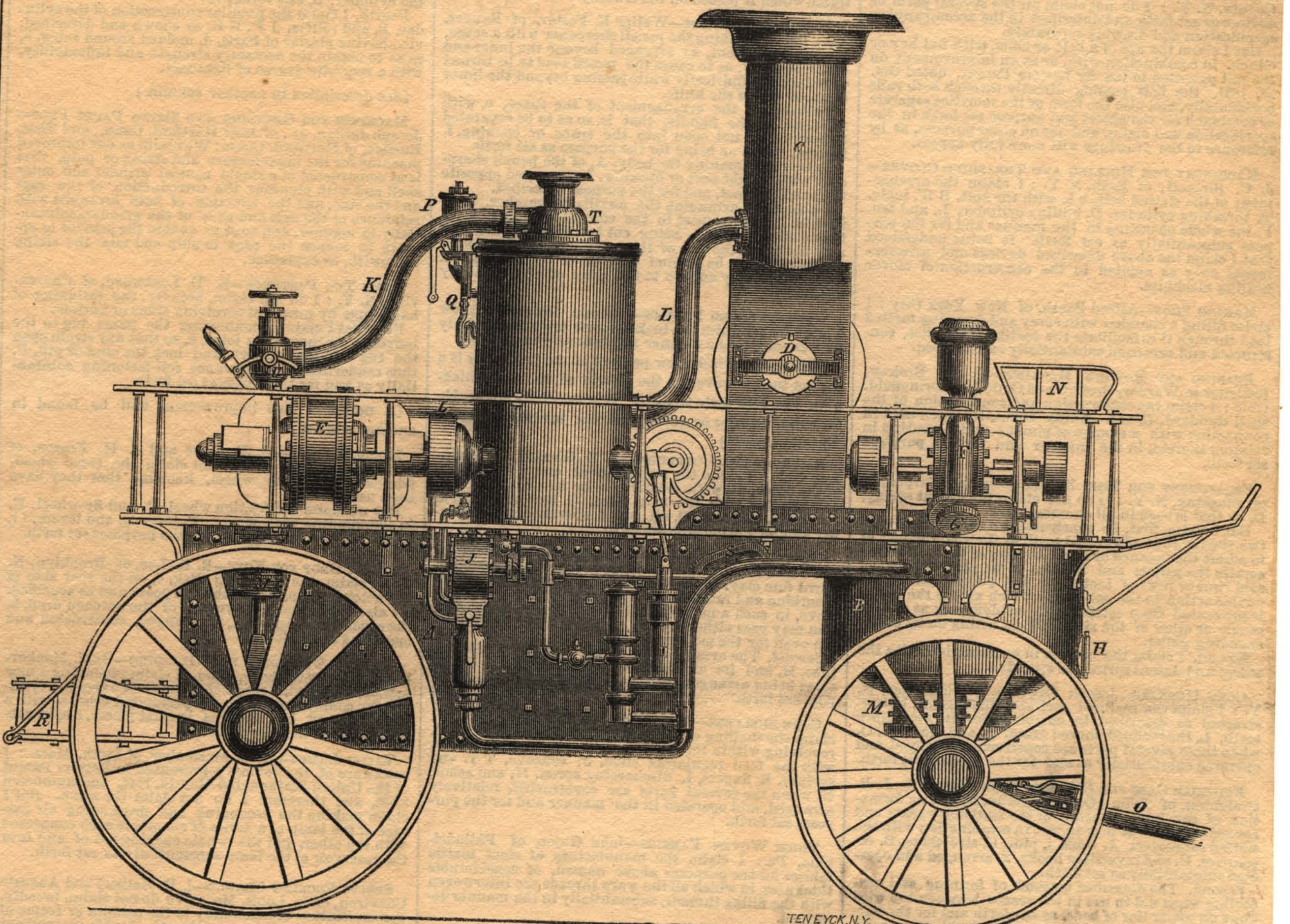
are attached. This tongue is made to disconnect by means of a lever under the control of the driver. P is a steam whistle, Q a steam gage, and R the platform for firemen. S is the

heater for feed or supply water. T is a safety valve, and U the throttle valve.

We think this a simple and convenient form of steam fire engine, and admirably adapted

to the object for which it is designed. Its weight is from 4,500 to 5,000 pounds, with capacity to force two 1 inch streams 175 feet, or one $1\frac{1}{2}$ inch stream the same distance; and

SILSBY, MYNDERSE & CO.'S STEAM FIRE ENGINE



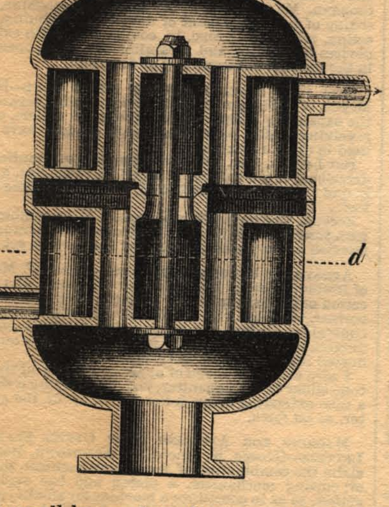
the pressure of steam required to produce these effects will only range from 40 to 60 pounds per square inch. A working pressure of steam can be generated in the boiler in

from eight to ten minutes, and this can be maintained constantly to force one or two streams of water of the sizes mentioned. Its main working parts are constructed under

Birdsill Holly's patent, issued in 1855, by Messrs. Silsby, Mynderse & Co., Island Works, Seneca Falls, N. Y., who will furnish any additional information desired.

HOADLEY'S FEED-WATER HEATER FOR BOILERS.

FIG. 1.



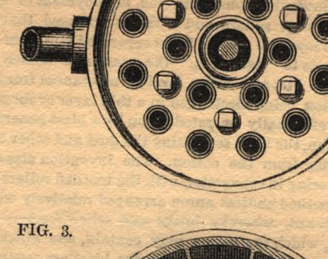
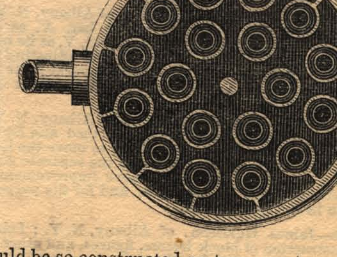


FIG. 3.



It is a well-known fact that a great saving is effected by conducting the exhaust steam of a steam engine through a feed-water heater after performing its function in the cylinder, and thus imparting through this agency a great portion of its heat to the cold water before it enters the boiler; and hence its follows that a heater, to be thoroughly effective, should be so constructed as to present as much surface as possible to the action of the steam, and contact of the supply water.

The accompanying engravings show an improved honey-comb heater, which accomplishes this desideratum in a marked degree, in which Fig. 1 represents a vertical section, Fig. 2 a top view of the under section, and Fig. 3 a horizontal section of the same at the dotted line, *c d*, of Fig. 1.

This heater receives its name on account of its resemblance to a honey-comb, and consists of two cylindrical sections containing a series of tubes cast with them, and communicating above and below, with spaces at the center part, where they are secured together by a screw bolt at the upper and lower ends of the heater, the spaces at these last mentioned parts being provided with nozzles for the entrance and exit of the exhaust steam to and therefrom. These tubes and spaces cause the steam to be displayed and brought in contact with a large area of heating surface, which receives a great portion of its heat, and in turn constantly imparts it to the supply water passing through the several water spaces between and around, and above and below the upright tubes and spaces, as it ascends after entering the lower part of the heater, through the horizontal pipe, and before it is discharged from the upper end through the corresponding pipe conducting it to the boiler in a heated state.

This multitubular heater differs from all others in use in being formed as described in the claim upon which the patent was issued, "with the tubes, tube sheet or heads, and case, all of one piece of metal, without joints uniting these parts." It is at once cheap, durable and efficient, characteristics which commend it to all owners of steam engines.

Further information may be had by addressing J. C. Hoadley, agent, Lawrence, Mass.

Review of the Weather, &c.

FOR SIXTH MONTH (JUNE).

	1869.	1870.
Rain during some portion of the twenty-four hours,	10 days.	14 days.
Rain all or nearly all day,	1 "	2 "
Cloudy, without storms,	7 "	2 "
Clear, as ordinarily accepted,	12 "	12 "
	30 days.	30 days.

TEMPERATURES, RAIN, DEATHS, &c.

	1869.	1870.
Mean temperature of Sixth month, per Penna. Hospital,	73.62 deg.	77.21 deg.
Highest point attained during month, do,	92.00 "	95.50 "
Lowest do do do.	54.00 "	61.00 "
RAIN during the month, do.	5.58 in.	2.89 inch
EATHS during the month, eing for four current weeks or each year,	1025	1140
rage of the mean temperature of xth month for the past eighty-one ars, - - - -		71.69 deg.
est mean of temperature during that tire period, the present year (1870),		77.21 "
est mean of temperature during that tire period, 1816, - -		64 00 "

COMPARISON OF RAIN.

	1869.	1870.
t month (January),	4.28 inch.	4.07 inch.
nd month (February),	4.76 "	2.53 "
d month (March),	5.30 "	4.06 "
th month (April),	2.12 "	5 60 "
month (May),	4.23 "	6.28 "
month (June),	5.58 "	2.89 "
otals for first six months of each year, -	26.27 inch.	25.43 inch

he above exhibit shows the mean temperature the *Sixth month*, 1870, to have been *unparalleled* ing a period of *eighty-one* years, and whether r reached before that time we have no reliable ord to consult. The same month for 1828 and 1, however, nearly equalled the present year, ing within a fraction of a degree.

Another peculiarity of the present season, as we arn from the Penna. Hospital, is the fact that the nd was *eastwardly* from the 26th of the *Fifth* nth to the 11th of the *Sixth* month continuously, cept on the eighth of the latter, during a portion which day it was *southeast*. Although generally noring the word "*unprecedented*," as applied to y peculiar weather, the writer believes it will be cult to match this.

he above only notes the *consecutive* days. The l number of days during which the east wind vailed was, for the *Fifth* month, 16, and *Sixth* nth, 13.

he promised statistics of the hail storm have been eated, in consequence of only some eight or individuals responding to our request for infor- tion.

Before leaving the *temperatures* we should have dotted down the following "clippings:"

"LONDON, June 24, 2 P. M.—The past few days have been successively attended by almost torrid heat, which has driven many from the city to seek refuge at the seaside and country. The heat has been unparalleled in fervor, and much distress has consequently ensued. Relief has come to-day in the shape of a delightful cooling shower, which has effected a material change in the temperature."

Warm weather of June 24 and 25, 1870:

"At Lewiston, Me., the thermometer marked from 90 to 100 degrees on Friday and Saturday. On Saturday the thermometer at Boston reached 94; Wilmington, N. C., 92; Chicago 92; at Albany 105; St. Louis 98; Madison, Wisconsin, 98, and Cambridge, Iowa, 100. At Washington, yesterday, 95; New York 90."

To which we may add, for future reference, the following account of warm weather in the past:

"The records kept at Nuremberg, in Bavaria, supply the following interesting facts: In 1132 the earth cracked by reason of the heat, the wells and streams in Alsace all dried up, and the bed of the river Rhine was dry. In 1152 the heat was so great that sand exposed to the sun's rays was hot enough to cook eggs. In 1160 great numbers of soldiers in the campaign against Bela died from the heat. In 1276 and 1277, crops of hay oats failed completely. In 1303 and 1304, a could have crossed, dry shod, over the rivers e, Loier, Rhine and Danube. In 1393 and 1394 a titude of animals perished by the heat, which so great that the harvests dried up. In 1440 heat was extraordinary. In 1538, 1539, 1540 and all the rivers were nearly dried up. In 1556 e was a great drought, which extended over rly the whole of Europe. In 1615 and 1616 there in Italy, France and the Netherlands an over- vering heat. In 1648 there were fifty-eight con- ative days of extreme heat. 1678 was very hot, as were the first three years of the eighteenth tury.

The Clay Sarcophagus.—The marble Sarcophagus, for the remains of Henry Clay, designed to be placed in a monument, in the progress of erection at Lexington, Ky., is now receiving the finishing touches at the shop of Mr. Struthers, and will be removed to its destination in a short time. It is made of white Pennsylvania marble, from a design by Mr. Frederick Graeff, and is in the form of a coffin, with a pall partially covering it. A wreath, cut in the top, will contain only the name of the deceased. The remains of Mr. Clay were buried at Ashland, the coffin being enclosed in a leaden case. As the Sarcophagus is large enough to receive the case, it will not be necessary to disturb the corpse. The base of the monument, in which it is to be placed, is so constructed as to admit of the Sarcophagus being seen.

93

Laying of a Corner-Stone.—On Monday after-

AMERICAN ACADEMY OF MUSIC.

—The PROMENADE CONCERT and GRAND BALL, in aid of the Fund for Insuring the Building and Properties, to improve the Mechanism of the Stage, and to furnish additional Scenery, &c., will take place in the Building, on BROAD and LOCUST Streets,

On THURSDAY EVENING,

The SEVENTEENTH of FEBRUARY next,

Under the patronage of the following LADIES, who have consented to aid the undertaking by their presence and influence:—

Mrs. J. Rhea Barton,
" A. E. Borie,
" G. H. Boker,
" J. B. Budd,
" Thomas Cadwalader,
" G. Chapman,
" John Cadwalader,
" T. Cochran,
" Heyward Drayton,
" John Dallett,
" Henry Drayton,
" J. F. Frazer,
" J. R. Fry,
" C. D. Gilpin,
" B. Guillou,
" S. W. Gross,
" Oliver Hopkinson,
" James Hazlehurst,
" W. B. Hart,
" R. M. Hooper,
Mrs. L. R. Koecker,
" J. L. Lafitte,
" F. Lennig,
" W. D. Lewis,
" John Lindsay,
" Edwin Mitchell,
" Harry McCall,
" Isaac Norris,
" Francis Peters,
" F. S. Pepper,
" James W. Paul,
" J. P. Steiner,
" A. Murray Stewart,
" Nathan Taylor,
" Henry Tilge,
" George Trott,
" Fairman Rogers,
" William S Vaux,
" I. S. Waterman,
" William Whitney.

The following gentlemen have also consented ot give their assistance:—

J. Rhea Barton,
A. F. Borie,
H. D. Gilpin,
Thomas Cadwalader,
Isaac Norris,
John Cadwalader,
Oliver Hopkinson,
Harry McCall,
Francis Peters,
L. J. Levy,
J. L. Lafitte,
F. Lennig,
N. Taylor,
H. Tilge,
George Trott,
Fairman Rogers,
Isaac S. Waterman,
Evans Rogers,
George S. Pepper,
Francis McMurtrie,
Frederick Graff,
W. C. Ludwig,
John Lindsay,
G. Schweitering,
H. L. Elder,
J. E. Caldwell,
R. F Gratz,
P. B. De Silver,
A. Benson, jr.,
J. F. Tobias,
John Castner,
A. Fitler,
E. W. Bailey,
John H. Brown,
J. L. Moss,
F. F. Wolgamuth,
Frank Carpenter,
John Cadwalader,
Heyward Drayton,
W. D. Lewis,
S. W. Gross,
Henry Drayton,
J. B. Budd,
G. H. Boker,
Jas. W. Paul,
C. Guillou,
J. R. Fry,
J. F. Frazer,
F. S. Pepper,
Wm. Whitney,
W. S. Vaux,
W. B. Haseltine,
R. M. Hooper,
W. B. Hart,
S. O. Fuguet,
F. J. Dreer,
S. Branson,
J. C. Harris,
W. S. Stewart,
Francis Lewis,
G. F Presbury,
Henry Budd,
G. J Gross,
E. R. Hutchinson,
James Traquair,
L. D. Baugh,
John W. Grigg,
James B. Caldwell,
E. P. Steel,
C. F. Lennig, jr.,
G. J. Weaver,
T. B. Peterson,
George Senat,
L. R. Koecker,
James Hazlehurst,
John Dallett,
A. Murray Stewart,
Edwin Mitchell,
Crawford Arnold,
G. W. Page,
B. F. Huddy,
G. H. Horstman,
J. W. Forney,
Wm. S. Smith,
Robert Smith,
Thomas Sparks,
John Notman,
J. H. Orne,
A. H. Denckla,
James Allderdice,
Traviz Cochran
Meyer Sternberger,

The stage will be arranged in Ball drapery, a beautiful scene presented in the back ground, with distribution of Statuary and Shrubbery.

Doors open at 8 o'clock. Music commencing at 8½, and Dancing at 9½. No secured seats. Gentlemen not admitted with canes or overcoats, nor Ladies with bonnets, on the Ball Room floor, during the dancing.

Cards of admission, $3 each, for Gentlemen; $2 each for Ladies, which can be obtained of the gentlemen above named, as also of a committee at the Academy, during the day and evening of the Seventeenth of February.

George S. Pepper,
John B. Budd,
Fairman Rogers,
Samuel Branson,
James Traquair,
Frederick Graff,
Nathan Taylor.
jan 21 28 feb 4 11 4t
Committee of Directors.

AMERICAN ACADEMY OF MUSIC.

The GRAND BALL and Promenade Concert will take place in the Building, on

THURSDAY EVENING, February 17.

Drors open at 8 o'clock—Music commencing at 8½ and Dancing at 9½. Floor Manager, M. HLASKO. Carriages set down on Broad street, heading South—take up, heading North. Doors on LOCUST Street, open for exit only, heading East. The Cloak rooms will be arranged to prevent loss or confusion. Tickets of admission $3 each, for Gentlemen; $2 each for Ladies. Children under fourteen years, admitted on Ladies' tickets, at $2 each. All tickets to be delivered at the doors. They can be obtained of the Gentlemen whose names have been heretofore published, who will act as Managers of the Ball; also to be had, at

BECK & LAWTON'S, No. 632 CHESNUT Street.
LEE & WALKER'S, " 722 " "
G. ANDREE, " 1104 " "

Also, at the Secretary's Office, 108 South FOURTH Street, the Girard, St. Lawrence, and La Pierre Hotels, and at the Academy Office, on the day and evening of the 17th of FEBRUARY.

GEORGE S. PEPPER,
JOHN B. BUDD;
FAIRMAN ROGERS,
SAMUEL BRANSON,
JAMES TRAQUAIR,
FREDERICK GRAFF,
NATHAN TAYLOR,
fel0 14&17 if
Committee of Directors.

Brooklyn Common Council.

THE OPEN CANAL ON THE WATER WORKS.

The Board met on Monday evening, to consider a communication of the Commissioners of the Brooklyn Works relative to the construction of a closed conduit, instead of an open canal, from Baiseley's pond to Jamaica creek. Alderman Kalbfleisch, the President, occupied the chair.

After the usual preliminary business, the communication, of which the following is the substance, was read by the Clerk:—

The Board of Commissioners represent that the existing contract for supplying the city with water provides that all the water east of Baiseley's pond shall be brought from its sources to the easterly terminus of the conduit at Jamaica creek, in an open canal of seven and a half miles in length, with no other protection to its bottom and sides than that afforded by a puddling of clay; that although it is possible so to construct it as to temporarily answer the purpose, every day's experience since the commencement of the construction of the canal has served to convince them that it can never be made an enduring work, nor one which can ever give any satisfaction, nor reflect any credit upon the contractor or the city, while the cost of its maintenance will probably far exceed the interest upon the difference between its cost and that of a more permanent structure. This consideration, added to the danger (from which it can never claim exception) of breaches being occasionally made from storms and other causes, which, until repaired, would cut off so much of the supply as came from points eastward of such breach, together with the certainty of its ultimate abandonment, and the substitution of a more costly structure is, to the minds of the Commissioners, of sufficient importance to warrant an increased expenditure for such a change in the plan of construction as will obviate all objections. The Commissioners deem such a change desirable, and submit the plan of Welles & Co., which is to construct a cylindrical brick aqueduct, eight inches thick, similar to the Cochituate or Boston aqueduct, being a cheaper form than that now constructing, and yet from the nature of the soil, it is believed, can be made more perfect, more enduring and fully capable, at all times and under all circumstances of conveying the quantity of water now contracted for, and a much larger quantity by raising the sources of supply at the eastern terminus and increasing the rapidity of its flow. The successful working of the Cochituate aqueduct is cited as proof of the sufficiency of the structure proposed. The several dimensions of the proposed aqueduct will be as follows:—

From L. Cornell's pond to P. Cornell's pond, 16,200 feet interior diameter, 6 feet; thence to Simonson's pond, 10 300 feet, interior diameter, 6½ feet; thence to Nostrand's pond, 5,100 feet, interior diameter, 7¼ feet; thence to Jamaica creek, 8,200 feet, interior diameter, 7½ feet.

The branch canals leading from the several ponds to the main line, as provided in the existing contract, also to be changed to aqueducts of a like character, and similar to that already built from Baiseley's pond to the main conduit; each being of such capacity as fully to enable it to carry the amount derivable from the source with which it connects, thus bringing the entire supply through covered aqueducts of brick masonry, secure against breaches, frost or snow, as well as the danger of the quality of the water becoming injured from animal and vegetable impurities being thrown or blown into it. The difference of cost between the canals as contracted for and the proposed aqueducts has been estimated by the contractors at $114,972, and by the engineer at $140,281. In view, however, of the reduced price of material, the Messrs. Welles have agreed to make this change for $110,000, in addition to their contract price, the work all to be done according to plans and specifications to be made by the engineer and subject to his approval, they guaranteeing the sufficiency of the work in all its parts. On submitting these propositions, however, to the engineer, he recommends that the bottom of the 13,300 feet of the proposed work which is required to be 7¼ and 7½ feet diameter, should be 12 inches thick instead of 8, in order to render it more substantial and secure. This would increase the cost by about $25,000, making an aggregate increase over the contract price of $135 000. The Commissioners urge the importance of immediate action in the matter, so that measures can at once be taken to commence the construction of the conduit, in order to insure the delivery of ten million gallons of water per day into the city, as contemplated in the contract. The Commissioners conclude by stating that they think it possible for the contractors to deliver the first supply of water in the city during the coming fall, if they make the necessary exertion to do so.

The communication is signed by John H. Prentice, J. C. Brevoort, Wm. Wall, Nicholas Wyckoff, Daniel Van Voorhis, Thomas Sullivan, Commissioners; and by James P. Kirkwood, Engineer.

The communication was accepted, and after a slight discussion, the subject was referred to the Water Committee to report on Monday evening two weeks hence.

Water Mains.—The laying of the thirty inch water main in Broad street will be completed to-day. The connection of this main with the one in Prime and other streets adjacent, has also been made, so that as soon as the main is connected with the reservoir, on Corinthian Avenue and Poplar streets, and its capacity tested, the lower section of the city will receive a full supply of water. These preliminaries will occupy the Department about ten days. The water main to connect the borough of Frankford with the Kensington Water Works will be completed about the middle of this month, the main on one side of the street having been laid as far up as the terminus of the Frankford and Southwark Passenger Railroad Co.

Visit to Harrisburg.—Yesterday, at noon, the Empire Hook and Ladder Company, with their truck, and the West Philadelphia Engine Company, with their engine, left for Harrisburg to participate in the fireman's procession which takes place to-day. Each company had 35 men, and made a very neat appearance.

Fully Committed.—George Buchanan, charged with striking Wm. Miller on the head with a brick, has been fully committed by Alderman Cloud. Miller has been insensible from the time the blow was inflicted, and his recovery is considered doubtful.

Novr 1st/59
79
Ledger

80

A WORKING OPERA.

1858

Three minutes to eight o'clock, one Tuesday evening in this present year, and I find myself upon the great stage of the Italian Opera house in Covent Garden. The piece upon which the curtain will rise in a few minutes is the well known tragic opera of the *Huguenots*. Before the curtain is the white and gold, and blue and purple decorated area which contains the picked representatives of the refined society of the middle of the nineteenth century.

Behind the curtain, and around me, are the men and women who will, to the best of their ability, give a representation of the stern and rugged Paris society of the latter half of the sixteenth century. They are collected from many countries: sallow Italians, high cheeked Frenchmen, stout Germans and Flemings, tall thin Poles, Tartar looking Hungarians, and the smooth faced natives of our own land. Some are chorus singers; some merely supers, or men who having two legs, two arms, one head, and one body, let these physical advantages out for a small nightly rental, to be arrayed in any costume the stage manager may direct, and the stage costume maker provide—to hold any flag, gun, sword, staff, halbered, battle axe, or goblet, that may be placed in their hands; and to be arranged in any position by the pantomimic director, upon bridges, in market places, turret windows, or princely halls; exhibiting in the mass every stage expression, from stern unrelenting warlike fury, to easy conviviality. The super, if he does not bring to his labor a very high order of intelligence, has an almost military sense of duty; and I firmly believe that if directed to take up an attitude as one of the ornaments of the pediment, in the portico outside the stately building, he would do so unflinchingly and mechanically, posing like an oriental fakeer, or an ancient columnstander, exposed to all the variations of a severe and fickle climate, until the curtain of death rang down upon him at his post.

The chorus singer is not so manageable an individual; he will sing, but he will not act. If he is a fat Italian, it only makes matters worse; for the old native indolent spirit can never be overcome by all the Anglo Saxon energy in the world. Ask Mr. Harris, the best and most active of stage managers, who with all the tact and experience, all the industry and determination, all the polyglot denunciations at his disposal, finds it a most difficult and heart breaking task to infuse some appearance of life into those masses that stand like a row of butts in a brewer's storehouse; musical, most musical, but at the same time most melancholy. The chorus singer's most common notion of dramatic action is the throwing up of a single arm, as if hailing a cab in the public streets; his extraordinary notion is the throwing up of both arms as if voting totally and energetically at a public meeting. Having exhausted these two very obvious, and not very elegant or elastic modes of pantomimic expression, he relapses into a state of profund, undisturbed physical quietude and self-possession. Out come his notes as melodiously and as correctly as the most exacting and fastidious conductor can desire. His voice is at the entire service of the management, but his attitudes never; and what little vitality is infused into such inert masses of vocalisation, is due to the introduction of mere pantomimic members of the chorus.

I pass on to the centre of the stage, and find it apparently a scene of hopeless entangled confusion. Machinist's laborers are rushing madly about, bearing what appear to be large solid blocks of architecture in their arms. Others are setting the elaborately painted walls and deep windowed recesses of the mansion of the Count de Nevers, the scene that opens the opera. Tables are being arranged covered with fruit, flowers, golden vases and drinking goblets. Neat pages are walking listlessly about with wine jugs in their hands; and the Catholic nobleman settle down one by one out of the surrounding confusion in their appointed places at the banquet, awaiting the rising of the wall of canvas that conceals them from their audience. Their legs form an unbounded field for observation, tightly cased as they are in the long colored stockings of the period. There are red, blue, black, slate, green, pink and scarlet legs of every variety of shape: some short and thick; some long and thin; some knotted like the trunks of oak trees; some stiff and unbending; some springing and elastic; some a little—just a little inclined inwards at the knees; some inclining in an equal degree outwards; some—the white ones—straight and equal all the way down, like altar candles; some like parsnips, others—the red ones—like large carrots; some very pointed at the knees; some flat in the calves, as if their possessors had been too much in the habit of lying supinely upon their backs, with their faces turned upwards; others sharp in the shins—so sharp that it is a marvel how any stockings can be found sufficiently strong to resist the cutting powers of such members. The click of the prompt bell is heard, and the opening notes of the opera swell up from the finest orchestra in the world, muffled, however, to my ears, by the folds of the intervening curtain. The old Huguenot chant merges into the opening chorus; the curtain rises, and the two halves of the great opera house—the stage and the audience—are made acquainted with each other.

81

While the banquet, with all its attendant music, is going on, a hundred busy workmen are preparing the second scene, the chateau and grounds of Marguerite de Valois in Touraine. At the proper moment, when the first scene has closed, the walls of the Count de Nevers' mansion are torn asunder, as if by an earthquake, by the troop of men who swarm behind them, and are hurried into recesses—called scenery docks—at the side; the tables, the goblets, the flowers and the turreted castle, the river, and the high, broad, solid flight of steps in the noble gardens of Chenonceaux, are displayed to the audience. The men with the curious legs crowd behind the scenes, or flow out of the different entrances, their places upon the stage being now occupied by ladies in flowing muslin robes, the maids of honor to Marguerite de Volois. Melody fellows upon melody; the plot thickens, under the struggling outbursts of the chorus, the warbling of the principal singers, and the surging sea of sound from the instrumentalists in the orchestra; the stage gradually fills with the people of the drama; the great roll of gray canvas comes slowly down, like a mountain mist; the distant music floats away, and the first act is over.

The illusion of the scene is destroyed at a blow. The palace and gardens of fair Touraine are no more; a hundred men in caps and shirt sleeves are running about the stage, hustling the sombre Huguenots and the gay Catholics in the costume of the sixteenth century; bumping against the titled loungers in their gibbous hast, white neck-ties, and patent boots—carrying turrets, trees, parts of staircases, fragments of houses, and beds of flowers in mid-air, shouted at by the excited stage manager, excited pantomimic director, excited machinist, excited scenic director. Bit by bit the chaos takes the form of something like order; two old solid inns are built up with pieces numbered and labelled like the parts of a church manufactured for exportation; a chapel is raised in the backgroud; the Seine is filled in; the stage is grouped with all the characters that usually attend a continental Sunday fair; the curtain again rings up, and a picture of life in the Pra-aux-Clercs of old Paris is presented as a basis for the second act.

The stage under the new mechanical arrangements, is in nearly all cases 'closed in' —that is to say, the old plan of wings, and 'flats' which slide on from each side, and join in the centre, is given up, and every scene is built up, as far possible, in a solid form, the whole being shut in by side pieces. The picture thus presented to the audience is, with the performers, enclosed in a semi-circular form occupying about two thirds of the available stage; and those who are before the foot-lights, with those who are behind the scenes, are left to enjoy their respective areas of comparative privacy undisturbed by each other.

It was while availing myself of this seclusion from the tragic interest of the story that was engrossing the large and fashionable audience in the front of the house, that I found a Huguenot soldier relieving his overcharged theological feelings in one of the passages, by throwing a modified back-somersault, technically known in the acrobat profession by the title of 'flip-flap.'

Outside the charmed circle, or semi-circle, of stage effect was the usual crowd of supers and chorus singers, interspersed with a few persons like myself, and half-a-dozen policemen, backed by the clean new brick walls of the building, and the dark staring windows—black from the intense light within the house—that look out upon the neighborhood of Covent Garden. Within the charmed circle, aided by the highest order of scenic art; aided by some of the most dramatic music that was ever given by a composer to the opera stage; aided by two of the greatest vocal artists that ever breathed the breath of life into the melodies of this immortal work, is it to be wondered at, that, looking through the gauze-paned window of that room in the castle of the Count de Nevers in the well known third act, I should, even from this point of view, be completely impressed with the illusion of the scene, feeling like one who, in the fatal month of August 1572, gazed upon the murky walls and heavy hangings of some Catholic noble's mansion; saw the hooded monks and nuns streaming in through the arched doors; heard the blood thrilling blessing of the sacrificial swords; and saw the anointed assassins slink stealthily out into the streets of old Paris to commence their fearful work. And when Raoul, in that passionate scene that follows the benediction upon hearing the deep toned bell of St. Germain, rushes to the same window and throws it open, although he gazes in reality upon a blank wall, a few grimy stage carpenters, a policeman, and a female dresser, waiting with a cloak for her mistress when he comes off after the present duet, who shall say when they look on that pale face, and in those two glaring, startled eyes that he does not see all he professes to see—the bodies of his helpless friends shot and cloven down in the narrow streets, or floating by in the dark waters of the Seine, with their upturned faces covered with blood? And even when the final leap from the window is taken, into the midst of the motley group who await him, it is at least a minute before he shakes off the influence of the scene, and returns to the more mechanical business of the stage.

The fourth and final act is not hurried over or slurred, because, after the great spirit and interest of the third act, it presents something of an anti-climax. A richly tinted windowed chapel is built up, inside which the full tones of an organ are heard, and from which the variegated light streams upon an enclosed yard, where the final massacre takes place. Part of a cathedral is seen, and outside the yard is a Gothic shrine, beyond which are solid blocks of houses forming the opening to a long, narrow, winding street, at the end of which glisten the waters of the Seine, lighted up with the pale glimmer of coming day. At the side, some of the men with the curious legs are seen once more, stationed to fire the final volley that ends the opera. At a given signal, it is done—the startled female members of the company are deafened for a few seconds with the roar of musketry, the stage is partially filled with smoke; the last faint notes are gasped out, and the great curtain falls for that night upon the opera of the *Huguenots*.

As I pick my way towards the stage door of the theatre, through the fourth ruin of the evening—the pulling down and packing away of the final scene—I feel that the faces I have seen under pumpkin shaped helmets, beef-eater cloth caps, black wide awakes, and puritan buff hats, will come across me at intervals for the next four months, sitting at cafe tables, standing at the corners of theatrical streets, and even meeting me in situations where it will be a long, sore, painful, but unavoidable tax upon the memory for me to recollect under what circumstances and in what places they have appeared to me before.

—*Chamber's Journal.*

82

NAVAL INTELLIGENCE.—The board of Naval Engineers appointed by the Secretary of the Navy to test the evaporating powers and other qualities of the two descriptions of boilers placed in the San Jacinto, have concluded their experiments and made their report. This is the first practical test of the kind ever made, and is, consequently, of importance to steam navigation. The boilers were constructed by order of the Navy Department expressly for the purpose—each having the same dimensions, grate surface, &c., and being of the most approved proportions; but one was of the horizontal tubular type, precisely like those used and most approved in the English and French navies, and the other was of the vertical water-tube type, such as is now used in our naval steamers, the invention and patent of D. B. Martin, late Engineer in Chief. The experiments were conducted four consecutive days of twenty-four hours each, with each boiler under precisely the same condition of practice as if at sea. A log was kept and everything accurately noted; there were fires kept alike, every pound of coal being weighed, and the ashes resulting from it. An indicator's diagrams were taken every hour. Nearly one hundred tons of coal were consumed, and 126,714 revolutions of the engines made. Ten Naval Engineers were engaged on the trial keeping watch night and day to be sure that no errors should occur. The report is full and explicit, too long to copy. It is sufficent to state that the Martin boiler proved superior beyond the expectation of all, showing a decided difference of eighteen and a half per cent. of fuel in its favor. This is important to those engaged in building steamers.

83

The steamers Fulton and Water Witch, at Norfolk, are being rapidly prepared for sea. The former will be in condition to take her officers and crew on board about the 10th of July, but the latter cannot be completed before at least six weeks. Both of these vessels are to proceed to the Gulf of Me[illegible].

The Quickest Speed in Everything.

[From the Clipper of Jan. 7, 1859.]

BEING A LIST OF EXTRAORDINARY SPEED AND REMARKABLE EVENTS IN SPORTING MATTERS, ACCORDING TO THE BEST AUTHORITIES.

MAN—RUNNING.

100 yards, in	9	sec.	George Seward.
¼ mile,	48½	do.	Henry Reed.
½ mile, 1 min.	58	do.	Henry Reed.
1 mile, 4 min.	23	do.	Hospool, England.
1 mile. 4 min.	36	do.	Barlow (in America.)
2 miles. 9 min.	36	do.	James Sheridan.
5 miles, 24 min.	57	do.	Jackson, American Deer.
10 miles, 51 min.	34	do.	Jackson, American Deer.
11 miles, 57 min.	20	do.	James Pudney.
20 miles, 1 h. 58 m.	18	sec.	Maxfield.

MAN—WALKING.

½ mile,	3 min. 18 sec.	Charles Westhall.
1 mile,	6 min. 42 do.	Wm. H. Boyd, North Star.
7 miles,	52 min.	William Spooner.
8 miles, 1 h.	2 min.	Charles Westhall.
10 miles, 1 h.	26 min.	Charles Westhall.
14 miles, 1 h.	57 min. 25 sec.	Charles Westhall.
20 miles, 2 h.	57 min. 2 do.	William Spooner.

Greatest distance walked in 24 hours, 102 miles.

Longest number hours walked without rest, 106, James Kennovan.

1,000 miles in 1,000 consecutive hours, Capt. Barclay, Ellsworth, and Eaton.

HORSE RUNNING.

RACING IN GREAT BRITAIN.—In a match between Saunterer and Anton, at Newmarket, in Oct., 1857, Saunterer ran 1 mile, 2 furlongs, and 73 yards, in 2 min. 10 sec. This is at the rate of one mile in 1 min. 41 1-7 sec., the best on record!

Three-quarters of a mile, in 1 min. 17 sec., by Gin, a 2 year old, being at the rate of 1:42⅔ per mile.

Mile and a quarter, in 2:10, or 1:44 to the mile, by Sir Humphrey.

Two miles, in three minutes twenty-five seconds, or at the extraordinary rate of 1:42½ to the mile, the best two mile time on record, by Inheritor, a 3 year old, at Liverpool.

Two miles and a half, in 4 min. 27 sec., by West Australian.

Three miles in 5 min. 21 sec., by Rataplan, being 1:47 each mile.

RACING IN AMERICA.—With us, the "time test" is the standard, and the following brief table will furnish our readers with the best time ever made in this country, at one, two, three and four miles:

1 mile, 1:42½ by Henry Perritt.
2 miles, 3:36½ by Berry.
3 miles, 5:28 by Brown Dick.
4 miles, 7:19¾ by Lexington.

It will thus be seen that there is very little difference in the time made in the two countries.

HORSE TROTTING.

1 mile, in harness, 2 min. 24½ sec.—Flora Temple.

1 mile, under saddle, 2 min. 25 sec. (half mile track)—Lancet.

1 mile, 100 lb. wagon, 2 min. 28 sec.—trotting stallion Ethan Allen.

1 mile, double team, 2 min. 41¼ sec.—Don and Lantern.

2 miles, in harness, 4 min. 57 sec.—Flora Temple.

2 miles, in double harness, 5 min 19 sec.—Lady Suffolk and Rifle.

3 miles, under saddle, 7 min. 32½ sec.—Dutchman.

3 miles, to 250 lb. wagon, 8 min. 3 sec.—Kemble Jackson.

10 miles, in harness, 28 min. 8½ sec. Prince.

20 miles, in harness, 59 min. 35½ sec.—Trustee.

50 miles, in harness, 3 hrs. 58 min. 54 sec.—Spangle.

100 miles, in harness, 8 hrs. 55 min. 53 sec.—Conqueror.

1 mile, double team, 2:29½—Ethan Allen and mate. [This we do not look upon as a fair test, however, as the animal that went with Ethan was a running horse, and assisted rather than impeded the pace of the trotter.]

PACING.—1 mile, in 2 min. 17½ sec.—Pocahontas.

SAILING CRAFT—CLIPPER SHIPS.

New York to Liverpool, Red Jacket, 13 days, 1 hour, 25 minutes.

San Francisco to Honolulu, S. I., King Fisher, 9 days, 20 hours.

The Sovereign of the Seas, in a voyage from Honolulu, S. I., made the extraordinary run of 6,245 miles in 22 days, and in 24 hours accomplished the distance of 430 miles.

Boston to Liverpool, James Baines, 12 days, 6 hours.

Baltimore to Liverpool, Mary Whiteridge, 13 days, 7 hours.

Liverpool to Melbourne, James Baines, 62½ days, and made the return trip in 60 days.

New York to Melbourne, Nightingale, 73 days; and this about equals the James Baines, from Liverpool.

Callao to Boston, Ocean Telegraph, 58 days.

San Francisco to New York, Trade Wind, 84 days.

San Francisco to Boston, Northern Light, 76 days and 8 hours

The highest speed ever made on the ocean was by the clipper ship Flying Scud, 460 miles in 24 hours.

RAT KILLING.

100 rats killed in 5 min. 30 sec., by the dog Billy, in England.

25 rats killed in 1 min. 28 sec., by a white bitch, in Philadelphia, in 1847.

OCEAN STEAMERS.

FASTEST PASSAGE ON RECORD.—By the Persia, from New York to the bar off Liverpool, nine days, one hour and thirty minutes, real time, the distance sailed in that time, according to the steamer's log, being 3,[illegible]5 miles.

SECOND BEST PASSAGE.—The steamer Vanderbilt, in her best passage across the Atlantic, ran the distance from New York to the Needles, a short distance from Cowes, in nine days and eight hours, real time. The difference in the distance between New York and Liverpool (or the bar,) and that between New York and Cowes (or the Needles) is about 55 miles, the latter being that much farther off. If we allow, then, four and half hours for the difference in distance, which is a very fair allowance, (according to the rate of sailing of the Vanderbilt on that passage) she would have made the run to Liverpool (or the bar) in nine days, three hours and a half, thus occupying two hours longer in crossing than the Persia.

FASTEST WESTERN PASSAGES.—By the Baltic, from Liverpool to New York, in nine days, thirteen and a half hours; and by the Arabia, in nine days, seventeen hours and fifty-five minutes.

The above are the best four passages, Eastern and Western, ever made across the Atlantic.

New York to Havana, Ocean Bird, 4 days 4 hours.

Havana to Sandy Hook, United States, 3 days 23 hours.

Havana to New York, Cahawba, 3 days 23 hours.

New York to Charleston, Nashville, 47 hours, wharf to wharf.

Panama to San Francisco, Golden Age, 12 days 15 minutes.

San Francisco to Panama, Golden Gate, 11 days 4 hours.

Liverpool to Australia, Golden Age, (American,) 47 days.

New Orleans to New York, Cahawba, 5 days 18 hours.

Southampton to St. Thomas (3,622 miles), Atrato, 11 days 8½ hours.

Southampton to Alexandria, India mail steamer Malta, 10 days and 16 hours, including 23 hours for stoppages, or 9 days and 17 hours running time.

134

RIVER STEAMERS.

New York to Albany (160 miles), Alida, 6 hours 21 minutes.

The South America, on the North river, made 26 miles in 1 hour.

New Orleans to Louisville (on the Mississippi), 1,500 miles, Eclipse, 4 days, 9 hours 32 minutes.

Sacramento to San Francisco, New World, 5 hours 45 minutes.

ROWING.

Miles.	*Min.*	*Sec.*	*Oars.*	*Name.*
1	6	15	12	Prima Donna, Charleston.
1	6	20	10	Annie Lourie, Charleston.
1	6	35	8	Star, Jacksonville, Fla.
2	10	00	4	Harvard Crew.
2¾	16	58	6	Wenona, Milwaukie.
3	19	22	6	Harvard, Boston.
3	21	35	4	Putman, Pittsburgh.
3	21	30	6	Camilla Club, Philadelphia.
5	31	30	4	Cygnet, Halifax.
6	42	14	4	Neptune, Boston.
9	67	34	8	Maid of Erin, Boston.

12 miles, 1 hour, 34 minutes, 30 seconds, Superior, 8 oars, Boston.

SCULLING.

2 miles, by Black Bird, Boston, 20 feet wherry......14:54
2 " Daw, shell, " 14:57
3 " Decker, dory, " 31:04
5 " Daw, 20 feet shell, New York..........43:00

SKATING.

1 mile, in 1 min. 56 sec., by Wm. Clarke, at Madison, Wis.

George Seward is said to have accomplished 30 miles in the hour.

FIRE ENGINE PLAYING.

HORIZONTAL.—It is extremely difficult to obtain correct reports of engine performances, and it may be that our record contains some inaccuracies, but as a general thing the figures will be found as near correct as it is possible to get them.

287 feet, by a steam engine in Cincinnati.

240 feet, by an engine formerly used by No. 34, of New York.

228 feet, by the Niagara, of Dayton, Ohio, through 100 feet of hose, inch nozzle.

226 feet, by Fountain, of Dover, N. H., through 50 feet of hose.

221 feet, by Winnebago engine, of Rockford, Illinois, through 200 feet of hose, inch nozzle.

222 feet, by Rough and Ready, of Dover, N. H., through 50 feet of hose.

208 feet, by No. 7, of Chicago, through 500 feet of hose.

140 feet, by No. 6, of New Haven, through 1,000 feet of hose, and draughted its own water.

PERPENDICULAR.

196 feet, by the Old Diligent, of Philadelphia, inch nozzle; two streams, ¾ inch nozzle, 155 feet; four streams, two gallery and two side, ½ inch nozzle, 134 feet.

187 feet, by No. 12, of Brooklyn.

182 feet, by Fountain, of Dover, N. H.

THE PRIZE RING.

Longest battle on record, 6 hours 15 minutes, Jem Smith and James Kelly, in Australia, 1855.

Longest in England, 6 hours 3 minutes, Bill Hayes and Mike Madden, in 1849.

Longest in America, 3 hours 22 minutes, Young Barney Aaron and Monaghan, in 1857.

SHORTEST BATTLES ON RECORD.—Bob Watson beat Anderson in 2 min.; Phil. Sampson beat Bill Hall in 2 rounds, no time given; Gas Hickman beat G. Cooper in 2 rounds, in 3 min.

Greatest stake fought for, $10,000, Hyer and Sullivan, in Maryland, in 1849.

CRICKET.

Greatest distance a ball has been struck from the bat to the pitch, 175 yards, by W. Fellows, of Oxford, England.

Greatest distance a ball has been thrown both ways, 110 and 107 yards, by G. Parr, of England.

Greatest distance a ball has been thrown one way, 112 yards, by Adams, of England, he throwing but 98 the reverse.

Greatest distance thrown in America, 108 yards 3 inches, by Dr. Spencer, of Paterson, N. J.; also, 108 yards, by Phelps, of Utica, N. Y.

Best season's average in America in batting by, Bingham, in 1856, viz., 8 innings, 192 runs—average 24.

Best season's average in England in batting, by G. Parr, in 1850, viz., 52 innings, 1,287 runs—average 24, and 39 over.

Best season's average in bowling in America, by Cuyp, in 1857, viz., 64 wickets, 309 runs—average 4, and 53 over.

Best season's average in bowling in England, by J. Bickley, in 1855, viz., 57 wickets, 220 runs—average 3, and 49 over.

Highest score obtained against eleven in the field in America, viz., 120, by J. Turner, of Camden, N. J.

Highest score obtained against eleven in the field in England, viz., 278, by Mr. Ward, in 1820.

Highest score in a match, 297, by Thomas Walker, of England.

Most wickets taken in a match in America, 22 out of 30, by Cuyp, for 57 runs, at Newark, in 1857.

Eleven females of Hampshire beat eleven females of Surrey, on Oct. 2, 1811, for 500 guineas a side.

LOCOMOTIVES.

18 miles were run by a special train in 15 minutes, in conveying the Duke of Wellington from Paddington to Slough, in England.

14 miles in 11 minutes, by the locomotive Hamilton Davis, with six cars attached, on the New York Central Railroad, in 1855.

10 miles in 7½ minutes, on the Pennsylvania Railroad.

144 miles in 2 hours and 49 minutes, from Albany to New York, on the Hudson River Railroad.

84 miles in 1 hour and 30 minutes, from Indianapolis to Union City.

305 miles in 7 hours and 32 minutes, from Albany to Niagara.

BIRDS—VELOCITY IN FLYING.

A falcon, belonging to Henry IV. of France, once escaped from Fontainebleau, and in 24 hours after was found in Malta, a space computed to be not less than 1,350 miles.

The eider duck can fly at the rate of 90 miles an hour.

The common crow flies at the rate of 25 miles an hour.

The swallow flies at the rate of 90 miles an hour.

The pigeon will fly at the rate of 1 mile a minute for several hours.

In the month of April, 1858, a pigeon match took place, the birds to fly from London to Gravesend, a distance, "as the crow flies," of about 26 miles, which was flown in 18 minutes 9 seconds, equal to 1 mile in 43½ seconds.

BALLOONING.

Mr. John Wise, a well known æronaut, says that he has moved in a stormless and cloudless atmosphere at the rate of a mile in 42 seconds. Mons. Goddard moved seven miles in five minutes, and 190 miles in three hours and thirty minutes.

BILLIARDS—GREATEST NUMBER OF POINTS MADE AT A RUN IN BILLIARDS.

Spot Ball Game—1,700, by Lyman Higham, the Albany pony.

Principally around the table—243, by Michael Phelan, of New York.

LEAPING—MAN.

28 feet, in one leap, by John Howard, the pedestrian.

31 feet 7½ inches, over nine horses, in San Francisco, by Thomas King, Battoute Leaper, of Baltimore.

LEAPING—HORSE.

39 feet, over water, by Chandler; 34 feet, over hurdles, by Calverthorpe; 33 feet, over wall, by Lottery.

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delphia City Railroad, for bridge over the river Schuylkill—the company say they are ready not only to pay over the $150,000 at the earliest moment, but are also ready to build a depot, and to extend their track according to the provisions of their charter; one from the Receiver of Taxes, asking for $60 to pay for making a correct list of taxables in Philadelphia, so that jurors may be drawn according to law; for the erection of a reservoir in the Twenty-fourth Ward, in order to give an increased supply of water.

The President of the Pennsylvania Railroad presented a communication, showing that in consequence of the obstruction of the Market street track by coal cars, their trains are not unfrequently detained in a manner which operates injuriously to the road, in which the city is a heavy stockholder, by preventing passengers from making through connections. On the west side of the Schuylkill this is particularly the case, the drivers of the coal trains oftentimes obstructing the tracks with dogged stubbornness. The company desire the right of precedence upon the track for fifteen minutes upon the arrival of each train. Referred to Railroad Committee.

A petition was received from R. G. Lamont, of Cincinnati, offering to enter into contract to extinguish all fires that may occur in Philadelphia, for the sum of $200,000 per annum.

One from Chief Water Engineer Birkinbine, relating to the attitude assumed by himself towards Councils. He complains of the report of Common Council as "unfair, unjust, and absolutely false."

Mr. Drayton objected to the reception of a document in which the opposite Chamber was thus offensively characterized. He moved that the document be returned to Mr. Birkinbine.

Messrs. Drayton, Neal, and McIntyre gave their views, when

Mr. Davis called for the reading of the entire document before action was taken.

Mr. Drayton's motion to return the paper to its author, without further consideration, was agreed to with but one vote—that of Mr. Parker—in the negative.

[The contents of the document have mainly appeared in our columns, and are a reiteration of the alleged shortcomings of the two engineers discharged by Mr. Birkinbine.]

A petition was received from Samuel W. Stockton, asking for payment of damages to his

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91

LOCAL INTELLIGENCE.

The Trial of Steam Engines at the State Fair.—The final trial of steam engines took place at the Fair grounds, yesterday afternoon, when the Hibernia, Washington, and Mechanic, contended for the premium. As will be seen by the report annexed, the Hibernia has come off the victor. She was built by Reaney, Neafie & Co., and is said to be one of his best *machines:*—

"Washington," made by Poole & Hunt, Baltimore. Time occupied from the lighting of the fire until she was started, 18 min. 30 sec.

Length of hose......................205 feet 10 inches.
Diameter of nozzle..............................1¼ "

	Steam.	*Air Vessel.*
At starting..................	85 lbs.	0 lbs.
In 5 min....................	90 lbs.	125 lbs.
In 10 "	80 lbs.	100 lbs.
In 15 "	80 lbs.	120 lbs.
In 20 "	70 lbs.	140 lbs.

Maximum pressure of steam.................. 95 lbs.
Horizontal stream...............................239 feet.
Vertical stream, estimated.....................178 feet.

Water was found in all the cups on the flag staff.

"Mechanic," made by Reaney & Neafie. Time occupied from the lengthening of the fire until the engine was started, 13 minutes 20 sec.

Length of hose.................208 feet 10 inches.
Diameter of nozzle............................1 inch.

Pressure of steam and on air vessel:—

	Steam.	*Air Vessel.*
At starting..................	55 lbs.	0 lbs.
In 5 minutes................	92 lbs.	60 lbs.
10 minutes..................	105 lbs.	32 lbs.
15 minutes..................	92 lbs.	180 lbs.
20 minutes..................	80 lbs.	160 lbs.

Maximum pressure of steam ....115 lbs.
Horizontal stream.............. ....203 feet.
Vertical stream.................................167 feet.

Water in all the cups but the uppemost.

In a short time after the engine was started, the hose burst. The engine was, however, kept in motion, and in a short time another hose was attached, which also burst. This having been repaired, the engine continued for the remainder of the 20 minutes allowed to each engine.

"Hibernia," made by Reaney, Neafie & Co. Time occupied from lighting the fire until the engine was started, 12 minutes 21 seconds.

Length of hose...........................203 feet 6 inches.
Diameter of nozzle.......................1 5-16 inches.

Pressure of steam and on air vessel:—

	Steam.	*Air Vessel.*
At starting......................	60 lbs.	0 lbs.
In 5 minutes.................	105 lbs.	190 lbs.
In 10 "	65 lbs.	135 lbs.
In 15 "	90 lbs.	75 lbs.
In 20 "	95 lbs.	120 lbs.

Horizontal stream..............................254 feet.
Vertical stream (estimated)....................188 feet.

The steamers Washington and Hibernia threw their vertical streams over the top of the flag-staff, the former about five feet, and the latter about fifteen feet. The flag-staff is 173 feet high.

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tee on Railroads.

A communication was received from H. B. M. Birkinbine, Chief Engineer of the Watering Department, stating that materials and workmen have been sent to J. T. Rich's shop, at Sixteenth and Hamilton streets, and also that the reasons for discharging the engineers were, that one refused to do his duty, and the other one appropriated property of the city to his own use. It was intimated at a former meeting of Councils that the shop at Sixteenth and Hamilton streets belonged to the Chief Engineer. The Engineer complains that Councils, as well as the Committee on Water, have acted unfairly towards him, and made allegations which were unfair, unjust, and wholly false.

Dr. Sites moved that the communication be handed back to the Chief Engineer of the Water Works, with instructions to *confine his remarks to the truth.* Commn Oct 6/59

Mr. W. B. Thomas seconded the motion. He had never heard a more interesting communication ever sent to any deliberative body. He declared that the whole document abounded with falsehoods from beginning to end—there was scarcely a statement in it but what was false! Mr. Thomas spoke at some length. He said when Mr. Birkinbine appeared before the Committee appointed to investigate the subject, he was represented by paid counsel—a member of Councils. He declared that Mr. B. had discharged two good men and employed incompetent men, by which two of the pumps at Fairmount had been exploded.

Mr. O'Neill concurred with the last speaker. He would be ashamed if he had voted for such a man.

Mr. Cresswell made a few remarks. He knew Mr. Birkinbine to be a little, petty tyrant, who was disposed to walk roughshod over any one.

Dr. Sites was sorry for the Chief Engineer, for he had sunk below the standard of a gentleman. He was on the Committee of Investigation when the Chief appeared, not daring to look any member of the Committee in the face. He looked like a culprit. The speaker reiterated what had occurred before the committee, and the frivolous reasons given by the Chief Engineer for discharging the engineers. Among them was one that one of the engineers had taken a quantity of coal which belonged to the city. It was afterwards proven that the coal was taken in open, broad day light, and was to be replaced. Besides this, Mr. B. had confessed that he had told a lie in the matter. They had a duty they owed to themselves, and the lie should be thrown back into his teeth.

Mr. Miller contended that the Chief Engineer, in sending that communication to Councils had only done his duty to himself and his family.

Mr. Quinn was sorry that the last speaker appeared there as the apoligist of the Chief Engineer, a man who was charged with being a miscreant, who had been tried, who was condemned, and is now a convict! He trusted the communication would be sent back. He trusted they would not quietly permit themselves to be called liars by such a preacher.

Mr. Wistor moved to amend that the communication be returned to the Chief Engineer, as being disrespectful to that body.

Dr. Sites accepted the amendment, as Select Council had passed it in that way.

Mr. Wistor said if they received such communications as those they were no longer fit to represent the people.

Mr. Justice said he was not so thin-skinned as to see anything insulting in this communication.

Mr. Potter and Mr. Reilly were in favor of receiving the communication, and the former gentleman thought they would still further degrade themselves by rejecting it.

After a discussion of over two hours, the motion was agreed to by a vote of 38 to 22.

The chair submitted

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stallion. On the track this animal showed a high degree of speed.

The trial of steam engines at the fair yesterday attracted more attention than the day previous. The trial was commenced with Baltimore, No 7, built by Poole & Hunt, Baltimore. Steam was raised in 11 minutes; length of hose used 205 feet 7 inches; diameter of nozzle 1 inch. During the trial the goose-neck, to which the hose was attached, was blown out. A second trial was allowed, when with a stream pressure of from forty to one hundred pounds, she threw a horizontal stream 186 feet, and a vertical one 167 feet. The Independence Steam Fire Engine, built by Hunsworth, Eakins & Co., of this city. Steam was raised in 15 min. 30 sec.; length of hose, 216 feet 6 inches; nozzle, 1¼ inch. With a maximum steam pressure of 80 pounds, she threw a horizontal stream of 193 feet, vertical 143 feet. The hand engines were next tried, being supplied with water from the Independence Steam Fire Engine. The engines were all fully manned, and played about two minutes each, with the following result:—Citizen, of Harrisburg, using 1 inch nozzle and 10 feet of hose, 196 feet horizontally. Assistance, of Philadelphia, same sized nozzle and hose, 182 feet 4¼ inches. This engine, according to the rules, was allowed 35 feet from the Citizen, on account of smaller chamber. Second class—Washington. ⅞ nozzle, 50 feet of hose, 154 feet horizontally; Philadelphia, 188 feet 3 inches; Weccacoe, 154 feet; Globe, 150 feet, and 5 feet allowance; Franklin, of Frankford, 158 feet, and 5 feet allowance. The Washington. Mechanic and Hibernia Steam Fire Engines will be tried this afternoon. The Washington and Hibernia are both first class engines, of equal capacity and power; the former built in Baltimore, by Messrs. Poole & Hunt, and the latter in this city, by Reaney, Neafie & Co.

LEDGER AND TRANSCRIPT.

Philadelphia, Friday, March 11, 1859.

LOCAL AFFAIRS.

Proceedings in Councils.—The stated meeting of Councils was held yesterday afternoon.

SELECT COUNCIL.—A remonstrance of residents on Dickerson street was presented, protesting against the paving of that street. Referred to the Highway Committee of the chamber.

A petition of members of the bar, and also Judges of the different Courts was received, asking for an additional room for the Law Library.

Petitions for the opening, grading and paving, and for the location of lamps, and the laying of water pipes were presented and referred.

The following communication was received from the Chief Engineer of the Water Works:

"In reply to the communication of Frederick Fraley, Esq., President of Schuylkill Navigation Company, addressed to Councils, February 24th, 1859, I would say, first, as to the legal rights of the Navigation Company, and in what way they are to be damaged by the city, is a question which would be perhaps more satisfactorily answered by the department of law. After a careful examination of all the information in possession of this department, I can see no cause of complaint by the Navigation Company. It is also apparent that in many instances the interest of the city has been greatly sacrificed to that of the Navigation Company. The city bought from the Navigation Company and other parties interested, all the water power of the Schuylkill river, after the canal was supplied with what was needed for the purposes of navigation. At that time the size of the canal and locks was fixed. The locks opposite to Fairmount were erected by the city, who had the entire charge of them up to the year 1832, at which time the Navigation Company took forcible possession of them, and erected a double set of locks, notwithstanding the remonstrance of the city. See letters of J. P. Wetherill, Esq., Chairman Watering Committee, to Jos. S. Lewis, Esq., President Schuylkill Navigation Co., under dates Nov. 15, Dec. 8, 11 and 29, 1832, to Jan. 12, 22, 24, Feb. 18, 1833. Since this, the Navigation Co. have maintained possession of the locks, and have also greatly enlarged their capacity, so that about three times the amount of water is now used in locking a boat that was required when the locks were first constructed by the city for the Navigation Company. It should be borne in mind that, besides constructing the dam, which is used jointly by the city and the Navigation Company, the locks and canal were constructed by the city, and large sums of money were paid to the Navigation Company, and other partise, by the city, for the water power at Fairmount. That the city has a clear right to all the water not needed for the navigation no one will dispute; and it is only the surplus water that it is proposed to use in the contemplated enlargement, thereby saving a great amount of power now wasted, in the large quantity of water passing over the dam during the year.

Second—"As to the injury that may result to the Dam, by extending the Mill House—the weakest part of the dam, if there be any, is the 'mound dam,' which is entirely of earth work, merely paved with stone on the upper side. It is proposed to make a wall of cut stone, four feet thick along the upper side of the dam so far as the new mill-house will extend; the flumes leading through the dam, are to be of masonry and the gates of iron. The mill-house below the mound will be also of cut stone, to one foot above high-water mark, so that the mound dam will be indeed much strengthened by the additional masonry above, and the mill-house below, and will by this addition be as permanent and reliable as any other part of the work. While the work is in progress, I would suggest the propriety of constructing a wall on the upper side of the mound, its whole length. This will add greatly to its strength and remove any danger which may now exist. The only unsafe part of the works, or from which I have any apprehension of danger, is the Guard Lock, now in possession of the Navigation Company. Originally the city erected a double set of gates. The Navigation Company removed one set and never replaced them, and the remaining gates are now in a dilapidated and unsafe condition. The city should have the control and management of these locks, so that they may enjoy the full value of the water which they have procured at so great a cost, as well as to protect themselves from accident and useless waste of water." Referred to the Committee on Water.

A communication was received from Wm. Mc-

MBER 20, 1859.

Trial of Steam Fire Engines at the State Fair.—Last evening another meeting of delegates from steam fire engine companies, desirous of entering for competition at Powelton, was held at the Agricultural Society's rooms, Chesnut street, below Seventh. In addition to the nine companies previously represented, delgates from the Good Intent and Delaware steam fire-engine companies were present, and it was stated that an engine from Baltimore, built by Poole & Hunt, would be entered. Messrs. Thornley and Warren, from the Committee to prepare rules and regulations, reported that the Committee were unable to agree among themselves, but had concluded to call upon outside parties, and had obtained the advice of several experienced engineers and machinists, not interested in the building of steam fire engines. Among them was John C. Cresson, Esq., who had drawn up the following synopsis for the Committee to frame the regulations: Name of engine to be stated; builders; cost of engine, per contract with builder; weight of engine ready for service; diameter and stroke of steam cylinder; diameter and stroke of pump; diameter of nozzle; capacity of pump for each able stroke or revolution of the engine. Facts to be observed on the trial:—Time of lighting fire; time of starting engine; pressure of steam at starting; pressure of steam every three minutes; pressure of air vessel every five minutes; average distance in 15 minutes; each engine to play 15 minutes without stopping; greatest distance thrown; quantity of water thrown; general working of the machine with a view to judge of its liability to get out of order. All the engines to play through the same line of hose. The suggestions of Mr Cresson were approved by the meeting, and referred back to the Committee to be digested. The meeting adjourned to meet at the call of the Committee.

Charge of Assaulting a Policeman.—Thos Bailey was before Alderman Miller, yesterday, on a charge of assaulting officer Thompson, at Haverford and Thirty-sixth streets, West Philadelphia. The officer testified that, as he was passing the corner named, the accused made an attack upon him, in which he was assisted by several others. He drew his billy to defend himself, when it was taken from him. He succeeded in taking the defendant to the station-house, notwithstanding the attempt to rescue. The accused was held to answer.

Philadelphia Trade Sale.—The sale of bla

CITY ORDINANCES.

ORDINANCE to make an appropriation to the Department for Supplying the City with Water for the purpose of extending the Water Works.

SECTION 1. *The Select and Common Councils of the city of Philadelphia do ordain.* That the sum of one million nine hundred and fifteen thousand ($1,915,000) dollars be and the same is hereby appropriated to the Department for Supplying the City with Water for the purpose of extending the Water Works; the same to be taken from the loan authorized by an ordinance creating a loan for the purpose of extending the Water Works, approved July 8, 1871.

Item 1. For new engine, No. 3, at Schuylkill Water Works, seventy-five thousand ($75,000) dollars.

Item 2. For new engine, No. 3, at Belmont Water Works, fifty thousand ($50,000) dollars.

Item 3. For rebuilding Fairmount dam, two hundred and twenty thousand ($220,000) dollars.

Item 4. For completion of 36-inch ascending main from the Delaware Works to reservoir, forty thousand ($40,000) dollars.

Item 5. For the completion of Belmont reservoir, seventy-five thousand ($75,000) dollars.

Item 6. For the completion of Delaware Water Works reservoir, thirty-five thousand ($35,000) dollars.

Item 7. For construction of large storage reservoir, East Fairmount Park, one million three hundred and twenty-five thousand ($1,325,000) dollars.

Item 8. For mains to connect large storage reservoir, East Fairmount Park, with engines, &c., ninety thousand ($90,000) dollars.

Item 9. For incidentals, five thousand ($5,000) dollars.

And warrants for the above shall be drawn by the Chief Engineer of the Department for Supplying the City with Water, in conformity with existing ordinances.

HENRY HUHN,
President of Common Council.

Attest—JOHN ECKSTEIN,
Clerk of Common Council.

SAMUEL W. CATTELL,
President of Select Council.

OFFICE OF THE CLERKS OF COUNCILS,
PHILADELPHIA, Sept. 6, 1871.

This is to certify that the above ordinance, entitled "An ordinance to make an appropriation to the Department for Supplying the City with Water, for the purpose of extending the Water Works," was returned by his Honor the Mayor to the Common Council on the twenty-second day of August, Anno Domini one thousand eight hundred and seventy-one, without his approval; and said ordinance having been reconsidered, was passed on the twenty-second day of August, A. D. 1871, agreeably to the seventh section of the act of Assembly approved February second, one thousand eight hundred and fifty-four, entitled "A further supplement to an act to incorporate the city of Philadelphia," by the following vote, to wit: Yeas 36, nays 15.

And the said ordinance, together with the objections of his Honor the Mayor, having been sent to Select Council for their consideration, was passed by that body on the 5th day of September, A. D. 1871, agreeably to the seventh section of the act of Assembly approved February second, A. D. 1854, entitled "A further supplement to an act to incorporate the city of Philadelphia," by the following vote, to wit: Yeas 18, nays 8.

Therefore, the said ordinance having been passed agreeably to the provisions of the act of Assembly in such cases made and provided, is a law, in full force and virtue.

Attest—JOHN ECKSTEIN,
Clerk of Common Counci

BENJAMIN H. HAINES,
Clerk of Select Council.

GRAEFF.

What He has to Say About that Large Reservoir.

It will be remembered that the Mayor vetoed the bill to appropriate about $2,000,000 for the extension of the water works. The main objection to the bill was an item of $1,325,000 for the new storage reservoir in the East Park, which gave no details of how this large amount of money was to be expended. The Mayor also thought that this work ought to be given out by contract. Mr. Graeff, the Chief Engineer, thinks not, and this is the way in which he concludes a letter on the subject, addressed to Councils:—

Some objection has been made to my estimate for the construction of the larger reservoir, and it has been asserted that the work can be done for a much less sum. I have only to say that my estimate has not been made upon mere assumption of probable cost, without experience of the manner of doing such work, and the extraordinary precautions necessary to be taken to insure its permanence and safety, but has been based upon careful review of the actual cost of doing exactly similar work at Corinthian avenue, Belmont, and Delaware reservoirs, as well as the cost to other cities who have recently built large reservoirs. A reservoir embankment cannot be constructed in the manner of a railroad, by careless contractors, of materials indiscriminately taken from a cutting, and placed upon a bank by a temporary railroad, but must be composed of carefully selected material, thoroughly consolidated, puddled, and lined. It must be remembered that a very slight failure in a reservoir, containing 750,000,000 gallons of water, might result in incalculable loss of property, and probable destruction of human life. The city of Boston, where public work is carried on in an intelligent and economical manner, has just completed the so-called "Chestnut Hill" reservoir at a cost of $2,500,000, to contain 730,000,000 gallons. Our estimate for a reservoir to contain 750,000,000 gallons is but $1,325,000, and therefore, in comparison with that of Boston, must be considered as exceedingly low. The estimate has been itemized in the manner usual in this and other departments of the city, and has had the approval of both the Committees on Water and Finance. On the 30th of November, 1869, nearly twenty-two months since, I asked for the amount necessary to do this and other important work. It has not yet been put at the disposal of the department; the best part of the season has been lost to us, as such work cannot be done to advantage after the first of December. I feel that I would be open to the charge of criminal negligence had I not called your attention to the frightfully dangerous position the city is placed in on account of the want of proper storage, as often and as forcibly as I knew how. Having done this on many occasions, it is for those higher in authority to incur the risk of delaying or leaving this all-important work undone.

85

THE WATER APPROPRIATI

Being unable to pass the Water Appropriation bill over the Mayor's veto, on Tuesday, the Republican members of Select Council voted a reconsideration and postponement, in the evident hope that they will be able to pass it hereafter. This appropriation must be made before the election, as the safety of the Mann ticket absolutely requires all the aid that can be derived from this and all similar sources of corruption. It has been plainly shown, and we think conclusively, that the sum appropriated by this bill is nearly half a million of dollars more than necessary, thus affording a very liberal margin for partizan purposes. With this excess, Mann & Co. hope to be able to foist themselves upon an unwilling public, and secure offices in which they can realize fortunes at the expense of public justice, and in opposition to the public will and welfare. Previous to the next meeting of Councils, the party lash will be so applied, we presume, as to insure a two-thirds vote in the Select branch, and this scheme of corruption will become a law notwithstanding the veto and well-grounded protest of the Mayor.

The veto message of his Honor is a very sensible document. His objections are conclusive, are very clearly stated and should have prevailed. The appropriation of $1,325,000 in gross for a work without details of plan or estimate, and even without determination as to the site, betrays a recklessness as to cost and consequences entirely unworthy of men entrusted with [illegible] legislation. Mr. Graeff may be very capab[illegible] very honest, but it is carrying the confidenc[illegible] me somewhat too far to appropriate without question any sum he may choose to suggest without requiring him to show, distinctly and specifically, the necessity for it, and how he intends to spend it—especially when it has been shown, by persons competent to make accurate estimates, that the proposed work can be done for nearly half a million of dollars less than the sum Mr. Graeff asks for.

But for political considerations and an evident design to use this prodigal appropriation to carry the coming election in the interest of certain persons who have made politics and public corruption a trade, the bill in question would not have passed Councils in its present shape. The urgent necessity for increasing our water supply, which is argued by Mr. Graeff and his backers in this case, has existed for several years. It was rendered very plain in the summer of 1869, and an appropriation, based on detailed estimates, might have been made long ago, without reference to an approaching election. After Mann, the deluge. The nomination of Mann, Collis & Co. has made it necessary to speedily increase our water supply so that the unpopularity of these candidates may be overcome by means of a surplus of money in the appropriation.

The bill vetoed by the Mayor must be passed. Party exigency requires it, and the public purse and welfare must yield to this exigency; the people must be compelled to pay nearly half a million of dollars, under false pretenses, to save a set of political swindlers and humbugs from defeat at the polls. "That's the way the money goes!" Broad street must be postponed for political reasons. Like another man we read about, William B. is crying for "water! water!" and water must be had, or he and his confederates in corruption will perish. Father Abraham, in the person of father Graeff, comes to the rescue, and Councils endorse the movement. Whisky is usually deemed all-powerful in politics; but Mann's case requires water. But will water save him? We shall see.

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pounds steam pressure. In five minutes after, steam pressure, 47 pounds; air do., 47 pounds. In ten minutes after, steam, 40 pounds; air, 60 pounds. In fifteen minutes after, steam, 37 pounds; air, 50 pounds. In twenty minutes after, steam, 35 pounds; air, 60 pounds. Maximum steam pressure, 79 pounds. Length of hose used, 203 feet 6 inches; nozzle 1¼ inches. Distance played horizontally, 109 feet; perpendicularly, 83 feet. Builders, Merrick & Sons, Philadelphia.

Southwark Engine.—This engine had steam up previous to being placed on trial, and started with a steam pressure of 186 pounds. In five minutes after, steam pressure, 117 lbs; air pressure, 75 lbs. In ten minutes after, steam, 67 lbs; air, 40 lbs. In fifteen minutes after, steam, 45 lbs; air, 35 lbs. In 20 minutes after, steam, 56 pounds; air, 44 pounds. Minimum steam, 40 pounds; length of hose used, 216 feet; nozzle, 1½ inches. Distance played horizontally, 145 feet. This engine did not play a perpendicular stream during her 20 minutes. Afterwards the stream was put up the mast, but as the judges had retired, the distance was not measured. Builders, Lee & Larned, Novelty Works, N. Y.

The distance the water was thrown vertically, was ascertained by a diagram of the mast, which was measured before putting up. The height of the whole is 173 feet from the ground. A line of small tin cups is also suspended from the top, and drawn down after each engine has played, to indicate how high the water is thrown. The little pond afforded abundance of water during the time the playing lasted. To day engine No. 7, built by Poole & Hunt, Baltimore, will be tried at 12 o'clock, and after it the Independence steam fire engine. The hand engines will be tried immediately afterwards.

During yesterday afternoon, considerable excitement was created by a horse which had been disengaged from a carriage making a "stampede" part of the distance around the track. He encoun-

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SOMETHING FOR THE PEOPLE AT LAST.—We are told that the Chief of the Water Department has organized his department by making all the appointments within his gift, and that *now* he will turn his attention to the necessity of affording the citizens an ample supply of water. Well, the people will be rejoiced to hear that they are to be attended to in this matter, even though it is after the more important public duty of rewarding the office beggars. Here is this matter of an insufficient supply of water, pressing upon the public attention and their patience, year after year, and annually growing worse. Still no adequate remedy is devised or recommended, or if recommended, presented as a mere matter of form, to show the department is in existence, drawing its salary, and not for the purpose of effecting a change for the public benefit, by a clear statement of facts, careful estimates of cost—which would show that the matter was not got up merely as a profitable, but unnecessary job—and, by a steady and persistent effort to perfect the purpose by pressing it continually upon the attention of Councils. The public must be intolerably tired by this time of reading every January a long report from the Water Department, setting forth in a sleepy manner the same facts year after year, and then letting the subject die out till the period for making the succeeding annual report comes round again. Why does not the department take hold of the subject at once, carefully consider what is to be done, and present some practicable plan that will insure a remedy? The people of Philadelphia are not afraid of expense when it will conduce to their comfort; and in what matter of domestic necessity is their comfort so affected as by the insufficient supply of pure water? The remedies heretofore recommended—that people should not waste the water, that they should be fined for cleaning their pavements daily, or allowing their waste pipes to run—are nothing but quack suggestions. The people pay for the use of water, and they expect that the authorities, when they take their money for supplying it, will give them sufficient for all their wants. Those who remain at home during the hot summer months, should at least have the luxury of water enough to wash their pavements and their persons, and not be compelled to stint themselves in the use of one of the prime elements of health and comfort, at the very period when the free use of it becomes the most necessary. If the water could be kept running from the reservoirs as rapidly as it is pumped into them, by having the distributing mains sufficiently large, there could be no scarcity of water, with the pumps continually at work filling the basins, if they are adequate to the task, and if they are not they ought to be immediately made so. The Schuylkill is a large stream, and there is water enough in it to supply the wants of Philadelphia with a much larger population. All it needs to effect the desired change, is an intelligent head to suggest the remedy and an industrious, persevering chief of the department to rouse, by proper representations, the attention of Councils to the inconveniences the public suffer from a scarcity of water, with the certainty that each year it will grow worse, Councils will then act in the matter understandingly and promptly. Will the new incumbent of the water department, now that he has performed the important duty of distributing the patronage of his office, see that the most important duty of the office—the distribution of full supplies of water to the citizens—is properly attended to? That is what the citizens expect, and what they

135

Croton Aqueduct
Engineer's Office, New-Yor

To the Editor of the New-York Times:

The accompanying letter from Professor ford, of Cambridge University, was received ye day morning. His eminent professional standin and his great practical experience in this particular subject will, I think, render his communication a most interesting paper at this time, corroborating, as it does, the views of our own Professors Chilton and Torrey. It must satisfy all parties of the real purity of our water supply.

I am, gentlemen, very respectfully,
Your obedient servant,
A. W. CRAVEN.

Shelter Island, Thursday, Aug. 25, 1859.

Alfred W. Craven, Esq.,

My Dear Sir: I cheerfully comply with your request that I should write out the views expressed in our recent conversation.

The experience of former years, with the Cochituate water at Boston, has made me familiar with the offensive qualities which I observed in the Croton on the occasion of my late visit to your City. On the first appearance of the bad taste and smell in the Cochituate water, there was a good deal of alarm on the part of some of the residents, and quite a general suspicion that decaying animal matters, such as dead fish, were lodged in some of the pipes.

There were peculiarities in the Boston water which I presume are also observed in New-York. One among these was the variable intensity of the offensive taste at particular localities; another was a prevailing excessive offensiveness of the water at certain points, while, at certain others, the water was uniformly good. To all these, attentive study and observation gave at length an entirely satisfactory explanation, and carried the source of the annoyance back to the Cochituate Lake and its tributaries. Variation in the intensity was observed on Saturday and Monday, (washing day,) as compared with other days, at points near the summit of elevations over which mains serving small quantities of water passed; and at other points on inclined pipes, where the consumption was moderate and at considerable intervals. Uniformly offensive water was drawn from near the ends of branch mains, terminating sections of ascending pipe, called "dead heads." Uniformly good water was drawn from the ends of branch mains whose inclination with regard to delivery was the reverse of the last mentioned, and where the consumption was small. Where the consumption was large, the taste was, of course, that of the water at the Brookline reservoir or at the Lake. These observations, as well as the fact of volatility—without which, of course, the offensive smell would not have been perceived—showed the objectionable ingredient to be lighter than water, and tending to take in the pipes, and elsewhere, the highest place. The taste of the water at the Lake, from considerable depths, as compared with that at the surface, confirmed this view.

At first the filters revealed the presence of minute vegetable forms, which were green, and which yielded the wax usually accompanying the green coloring matter of aquatic vegetation. During the prevalence of this peculiarity, the taste of the water was generally defined as that of water in which fresh green cucumbers had been standing for a little while.

At a later period, and with the diminution of vegetable life, there appeared increased numbers of microscopic forms of animal life. During the period of their great abundance, some fancied that they perceived, in certain localities, a taste of decaying fish. This taste was not perceived so distinctly as the former, by many, and among them myself. It was conceivable, however, that in certain localities, where, from peculiar conformation and inclination of the pipes, there was an eddy in the circulation, these minute organisms might accumulate, and, consuming the air in the water, die and decay, and possibly impart to the water, for a brief period, a taste which was described as fishy. The whole time of this phase of the annoyance was comparatively brief, and although it was somewhat offensive, and quite as much so as the taste of the Croton at any of the various points at which I have proved it, within the last few days, it was in no instance, so far as I know, in the slightest degree prejudicial to health.

The source of the trouble in the Cochituate water was the abnormal increase of minute aquatic plants in the low grounds along the margin of the lake and its tributaries;—which grounds were flooded at all ordinary times, but which, in consequence of unusual drought and undiminished consumption, had been more or less laid bare. This extent of marsh land, exposed to the direct sun and deprived of rain, became a hot-bed of the vegetation peculiar to stagnant water, and to some extent of minute animal life. On the occurrence of rains in the early Autumn, the waters swept over these areas, detaching more or less of the vegetable matter, and making a sort of vegetable infusion; which infusion gave rise to the peculiar taste. This taste, though excessive, was obviously the same in kind as that which in Summer uniformly prevails in river and pond waters. These vegetable matters in turn became food for the minute animal forms always present in water of surface drainage, which, thus stimulated, increase to an extraordinary extent. In these animal forms—particularly in the crustaceans—the microscope revealed little globules of oil, obviously derived from the oil or wax of the plants upon which the animals had fed. In time these animal forms were consumed by aquatic creatures of a larger growth, and thus the water was restored to its normal condition.

The cause of the present trouble in the Croton is essentially the same as was that of the like trouble in the Cochituate a few years ago.

The tributaries for the Croton River have their origin in and flow through marshes and meadows, in which the varieties of aquatic vegetable life alluded to abound. There are, of course, numerous little pools in which algæ and other kindred water plants occur. The overflow of all these marshes, meadows and pools would present the condition of the Cochituate in early Autumn, already mentioned.

This overflow occurred in the violent storm which a few weeks since visited the region of the Croton water shed. This storm broke up and carried into the rivulets, and ultimately to the river, fragments of much of the aquatic vegetation. It carried from the surface of the soil into the tributaries the thousand nameless matters in progress of decay, which, in the ordinary course of events, would have been distributed through a much longer period, and would not have been perceived in their effect on the water. It also carried into the river an unusual quantity of mud, which, with the decaying organic matters already alluded to, account abundantly for the taste and smell which you have noticed.

As it was in the case of the Cochituate water, so in that of the Croton, your relief will be promoted by the renewal of the water, the steady exhalation from the vast surface of your lake and reservoirs, and the operation of the natural causes always active in river water to make it pure.

It should be remembered that the Croton water is merely river water, in which the qualities that distinguish such from spring water, have, through a juncture of unfavorable circumstances, been much intensified. The trouble is transient, and need not be a foundation for any serious alarm. If the peculiar taste is sufficiently offensive to justify a little effort to remove it, it may be rendered perfectly palatable by filtering through powdered charcoal.

I am, very sincerely yours, E. N. HORSFORD.

We have already alluded to a little pamphlet entitled "A Review of the Relative Commercial Importance of the Cities of New York and Philadelphia," from the pen of George W. Baker, Esq. It contains several valuable tables. "According to the census of 1850, the average productive power of each person employed in manufactures in Philadelphia, was about $1100 per annum, a rate confirmed by our own investigations; and the capital invested was about one-half the aggregate of production. Assuming that these relative proportions were correct, though the aggregate amounts were manifestly erroneous, and assuming they are applicable now, the respective items would stand as follows: Capital invested in manufactures in Philadelphia, $72,500,000; hands employed, 132,000; product, $145,348,738."

OUR RAILROADS.

The railroads of the State are thus summed up:—

Total length, miles	3,461
Mileage in operation	2,780
Cost	$135,724,609

THE CANALS OF PENNSYLVANIA.

	Miles.	Cost.
*Schuylkill Navigation Co.	108	$10,950,000
*Lehigh Canal and Improvements	71	4,455,000
*Delaware Division, (State)	60	2,200,000
*Eastern do. do.	46	1,735,236
*Susquehanna	41	897,160
*Lower North Branch	73	1,598,379
*Upper North Branch	94	4,500,000
*Union	99	5,000,000
*Wisconisco	12	381,836
*Morris	102	5,612,000
*Delaware and Hudson, (estimated)	108	2,500,000
Juniata Division, (State)	130	3,570,016
Western do. do.	105	3,095,522
West Branch, do.	72	2,832,083
French Creek, do.	45	817,779
Erie and Beaver	136	
Lackawaxen	22	
Bald Eagle	25	
Tide Water	45	
Conestoga	18	
Codoris	11	
Franklin	22	
	1146	

SUMMARY OF THE PRESENT ELEMENTS OF STATE PROSPERITY.

Assuming that our calculations are sufficiently correct to give a general idea of the elements which impart to the State its commercial value in the community of nations, we will group together those which are the most prominent.

The coal production of 1858, 7,654,185 say	$25,000,000
Productions in Iron, Cotton, and Woollen, outside of the city	30,000,000
*Miscellaneous productions outside of the city	80,000,000
Product of manufactures in the city and vicinity	171,848,738
Agricultural production (estimated)	85,000,000
Lumber, "	10,000,000
	$401,848,738

Capital representation		in coal lands	$323,829,000
Do.	do.	in farm lands	500,000,000
Do.	do.	in manufactures, outside the city,	80,000,000
Do.	do.	in city and vicinity	72,500,000
Do.	do.	Real and personal estate, exclusive of farms	800,000,000
Do.	do.	in Railroads	135,724,600
Do.	do.	in Canals	62,500,000

The State has, according to decennial increase a population of about 2,825,000, and her improvements completed and projected pass through or upon the borders of sixty out of her sixty-five counties, and if in one line would extend over 4000 miles.

The city of Philadelphia is the commercial focus of the State, and contains a population nearly equal to one-fourth of that of the whole State.—According to the ratio of increase previous to 1850, it should now be 600,000. She has the termini of twelve railroads within her corporate limits, radiating 880 miles, representing a capital of $70,878,744, and earning a gross income of $11,275,917.

During the past eight years her imports and exports have been as follows:—

	Imports.	Exports.
1850	$13,381,459	$4,669,910
1851	14,871,992	5,968,071
1852	16,113,166	5,994,554
1853	21,993,137	8,400,482
1854	17,800,210	7,628,623
1855	15,104,478	6,935,389
1856	18,128,314	7,899,929
1857	17,128,386	6,035,510
1858	12,892,215	5,662,384

In addition to the official returns of imports, it is estimated, by intelligent authority, that the merchants of Philadelphia import through New York and Boston, an average annual value of $6,000,000.

* Canals connected with the Anthracite Coal trade, total length 815 miles: cost $39,831,611.

† Inclusive of Live Stock.

Birkinbine, Bullock, and Brass.

Jobber Bullock is making a most unseasonable bid for the Mayoralty. On Thursday last, in his seat in Councils, he introduced a resolution that acted like a bomb-shell in his political camp. The fiery resolve was to inquire as to the removal of certain brass cocks, rings, pins, and so forth, from the City Works, on Cherry street, to a private establishment on Hamilton street. In the course of the debate, Mr. Eldridge stated that the last-named place formerly belonged to Mr. Birkinbine, the present head of the Water Department, and that it was now held by a "straw" man. And he alleged further that an immense quantity of the above-named articles have been removed from the City Works to this shop, where they have been remanufactured and sold to the city at the chief Engineer's own prices. It was also asserted that men had been sent from the City Works to this place, where they were employed for six and twelve days at a time.

These charges, if sustained, betray a most loose state of corruption in the Department of Water; and the fact that they are so boldly proclaimed in the City Legislature should have induced the Chamber unanimously to demand an inquiry on the subject. If it be really true that the city property is hauled to private establishments in which the Chief Engineer of the Water Works, or any other public officer, is directly or indirectly interested, the community have the right to know it. And, if such allegations be false, it is due alike to Mr. Biriknbine and the public, that a public officer who has hitherto stood unimpeached should have his vindication complete.

The opposition of Mr. Justice, and others, to any such inquiry is calculated, therefore, to add to the suspicion already attaching to the Chief Engineer, and cannot be considered otherwise than as foolish and ill-advised. As Mr. Birkinbine has been again elected to the position of head of the Water Department, it is proper that the public should know whether he is deserving of such a share of confidence; for if he be in any manner implicated in so bold a robbery, his impeachment becomes a matter of public necessity; or, if he be an innocent and an injured man, common justice ought to dictate his relief from charges so gross. And more than this, in the latter event, those who prefer such allegations deserve the punishment of wilful calumniators.

The lower chamber agreed to the appointment of the investigating committee, and a fair and impartial report on the subject is expected at their hands. Should they find enough to sustain the charges, there should be no backwardness in setting forth the truth in the matter. And if it be the fact that, under the influence of the heated term, the Jobber has overstepped the mark, and overreached even himself, the Committee ought to report with equal fairness. On them, perhaps, will depend the solution of the great question as to whether Jobber Bullock shall succeed Mayor Henry or occupy an humble seat in Common Council.

May 19/59

[For the Public Ledger.]

Extension of the Water Works.

Messrs. Editors:—Your collector of local matters, although generally correct, is entirely mistaken when he asserts "that the Schuylkill Navigation Company have endeavored to induce the city to enter into a contract with them before the work (of the erection of additional wheels at the mound dam) is commenced, so that the Company might have something to say in reference to the water to be taken from the Schuylkill." "The present Chief Engineer has protested against any such acknowledgment, and his views have been concurred in by the Committee on Water of Councils," &c.

The Schuylkill Navigation Company made no such effort as that above asserted. The facts are that, the Navigation Company asked an interview with the Committee. They showed the committee that they had *the undoubted control of the dam across the Schuylkill, mound, dam and all.* They wished to know what the committee proposed doing. The committee showed them that, so far from their doing anything to weaken the mound dam, they would very materially add to its strength, by erecting a stone wall on the upper side. The Directors of the Company being convinced that the strength of the mound dam would not be impaired, cheerfully consented to the proposed improvement. The Navigation Company can stop the wheels of the Water Works the moment the water ceases to flow over the breast of the dam. This is sometimes the case.

However humiliating it may be to the city to have to submit to the consent of the Navigation Company in this matter, still that Company has its rights secured, and they must be respected. The Watering Committee can have nothing to complain of with regard to their intercourse with the Navigation Company. The utmost harmony exists between them, and the Company showed no disposition to usurp any authority whatever. B. C.

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The Delaware Terminus of the Pennsylvania Railroad Company.

Messrs. Editors:—Since you had the kindness to publish a communication for me, showing some few of the advantages of the plan I have presented to the Pennsylvania Railroad Company for reaching the Delaware river terminus by a tunnel through or under Callowhill street, I have carefully read the various public comments of other correspondents upon that plan, as well as what they have offered to the consideration of the Railroad Company and the public in favor of projects of their own.

The objections, if they may be called such, against the Callowhill street plan, appear to reduce themselves to the single item, cost; and those who have much more costly plans of their own, when all things are considered, to recommend at League Island, Greenwich, and Washington street, seem to be greatly alarmed at the expense of mine, and, to encourage their fears, have extended my idea till they make it cover much more ground than is contemplated by me, and considerably more than is required for its perfect consummation, and to realize its advantages both to the Pennsylvania Railroad Company and the city of Philadelphia.

By urging the single objection, cost, it seems to be admitted that, in other respects, my plan is the most feasible and proper one; and certainly if by it we get the uninterrupted use of steam power to the shipping point, without ever interfering with the other traffic and travel of a large and populous city, or being interfered with in any manner by these interests, a great good will be accomplished, which will not only enable the Railroad Company to work its road more economically, but will so reduce the cost of transportation on produce as to help our shipping interests very materially.

In the detailed estimate which accompanied my former communication I gave what I believed was a careful and accurate account of the cost of an open cut from the Schuylkill to the Delaware, filled in with a brick tunnel large enough for two tracks, including the cost of a railroad bridge over the Schuylkill, above any navigable point, and therefore not liable to the great inconvenience and expense of a draw. In round numbers this cost was $900,000; a sum which I may safely say is not larger than the cost of the other plans presented, none of which avoid the inconveniences of a surface route through a populous city, nor the necessity of using horse or mule power to get freight and passengers to the Delaware.

Few persons are aware of the great difference in cost between the use of steam and of horses or mules in transporting large quantities of goods and produce. The cost of steam power to move one ton one mile amounts to 1 30-100 cts. With mule or horse power the cost is 8 cents per mile, or a difference in favor of steam of more than *six hundred per cent.!* This enormous tax is now paid by our shippers and jobbers, and if we can get rid of it entirely, we will benefit the trade of this city to the same extent. The authority for this statement of cost is J. Edgar Thompson, Esq., who, in his annual report to the Railroad Company, made January 28th, 1859, states that the cost of transportation from West Philadelphia, where mules are substituted for steam, to Dock street wharf, is 25½ cts. per ton, the distance being less than three miles. Now let us apply these figures to the various plans submitted, and we shall then see which has the greatest advantage in the matter of *cost.* Mine, I think, will be found the least expensive in its working operation, and therefore the best adapted to the wants of the Company and the interests of the trade and commerce of Philadelphia.

The Penna. Railroad Company paid the gross sum of $45,571 05 for the carriage, by mule power, of freight and passengers and for tolls, to and from West Philadelphia to their depots in and around the city, the nearest of which to the Delaware, is at Eleventh and Market streets, or about half the distance required to reach the shipping point. The details are as follows:

Passengers,	$15,483 30
Freight, 261,000 tons,	20,712 78
Tolls to city,	9,374 97

This sum of $45,571 05, represents a capital of $759,517 50, within $140,482 of the cost of constructing a tunnel to get rid of four-fifths of this expense! These figures are obtained from the Company's own reports, and it shows that the expense of delivering freight and passengers to their depots in the city, not half the distance to Dock street wharf, to be 10½ cents per ton, by mule teams.

The amount of freight delivered to and received in West Philadelphia by private parties, from the Railroad Company, was 224,926 tons, and allowing the same cost for transporting it (though it is said to cost 25 per cent. more,) and we have the sum of $23,617 23 to be added, making an entire cost to Railroad and private owners, for transportation of 486,926 tons, passengers and tolls, to be $69,188 28. This represents a principal of $1,153,138 00, or $253,138 more than the cost of the tunnel.

To deliver this tonnage of freight and passengers at *Dock street wharf,* which is necessary either for foreign commerce or domestic traffic, would cost, as Mr. Thompson, the President of the Company shows, 25½ cents per ton by mule teams. We have, therefore, this calculation—

486,926 tons at 25½c. per ton, 3 miles,	$124,165
Passengers,	36,310
Total,	$160,475

A sum which represents a principal of $2,674,583, nearly three times the cost of the tunnel.

Now let us see what it will cost to deliver this amount of tonnage upon the Delaware by *steam,* through the Callowhill street tunnel, a distance of only 2½ miles, at a cost of 1 30 100 per mile per ton, or 3¼ cents per ton for the whole distance:

4-6,926 tons, 2½ miles, 3¼ cts. per ton,	$15,825 09
Passengers to Broad and Callowhill,	2,011 50
Total,	$17,836 59

which represents a principal of only $297,267 50, against $2,513,102, by mule power. What it cost the Railroad Company last year, $45,571 05, to haul 264,000 tons, could be done by my plan for $10,591 50, or a saving to the Company of $34,979 55, or the interest of $582,992 50. But to deliver this same amount at Dock street, cost the Company $103,630, whereas, by the tunnel, it would cost only $10,590,150, a saving to the Company of $93,038 50 on last year's business, or the interest of $1,550,641 44. Yet individuals urge the cost of the tunnel as its greatest objection.

Let us compare the cost of getting this amount of freight and passengers over the Callowhill street route with the cost by the other routes named. By Washington street to river Delaware, across a drawbridge at Gray's ferry, distance six miles, the cost by steam power the whole distance would be 7 8-10ths cents per ton. The calculation would stand as follows:

486,926 tons, 6 miles, 7 8-10 cts. per ton,	$37,980
Passengers,	10,308
Total,	$48,288

which is the interest of $804,800, or $506,434 greater than the principal of the cost by the Callowhill st. route.

To Greenwich Point, distance 8½ miles, the cost would be 11 cents per ton:—

486,926 tons, 8½ miles, 11 cts. per ton,	$53,781 86
Passengers,	13,099 00
Total,	$66,880 86

The interest of $1,113,014 33, which is a sum greater by $815,737, than the principal of the principal cost of running by Callowhill street. Yet the advocates of the Greenwich, and the Washington street projects, in the face of these facts, talk of the cost of the tunnel project!

But let us look at the facts as they will exist, and not as they exist in the imagination of people. I have shown that the cost of delivery, by mule-power, from West Philadelphia, to Dock street wharf, is 25½ cents per ton. Now is it likely that the residents of West Philadelphia, or those of the lower section of the city, will be more disposed than those in Market st., to have their streets blocked up with the cars of the railroad, or their travel and trade impeded by locomotives running upon and across all their principal streets, with four or five lines of local passenger railroads and cars, filled with passengers, crossing at right angles and running every three or five minutes? Will they not interpose their authority or that of the Legislature to prevent the locomotive coming into the built portion of the city limits whenever they experience this annoyance, as they would do to a much greater extent than they have ever yet experienced, when all the great business of the Pennsylvania railroad is thrown upon a surface track in the streets of the city? The calculation, therefore, might as well be made first as last for carrying the tonnage of the Pennsylvania Railroad by mule power over both the Washington street and the Greenwich routes. The calculations will stand as follows:—

486,926 tons over Washington street route, six miles, 8 cents per mile, or 48 cents per ton by mule power,	$233,724 48
Passengers,	72,620 00
Total,	$306,344 48

Which is the interest of no less a sum than $5,105,741!

486,926 tons to Greenwich, 8½ miles, 8 cents per mile, or 65 cents per ton,	$316,501 90
Passengers,	91,509 00
Total,	$408,010 90

Or, the interest of $6,800,181 66!

Both these routes are liable to the exclusion of the locomotive, which the Callowhill street would never be when once in operation. The public can see, therefore, which would be the most costly route, present or prospective. But the advantage of greater economy to the Company, is not the only consideration in this question of reaching the Delaware. To do so quickly with steam, and with cost reduced six hundred per cent. upon the freight, is to give a great advantage to this port as a shipping point, and one greater than can be enjoyed by any other city connected with the West and South by great lines of railroad communication. In New York the cost is even greater than in Philadelphia, of hauling freight from the railroad depots through the city by mule trains. The distance there is greater and is continually increasing, as city improvements extend and the locomotive is thrust further back. The report of Mr. Buckley, the President of the New York and New Haven Railroad, May 8th, 1857, says the net earnings of that road for the year were $423,964 26, and the cost of hauling the freight, from 27th to Canal street by horses was $44,530 66, on the following business:—Through passengers, 272,287; local travel, 758,300; total, 1,030,588 passengers. Through freight 56,502 tons; local freight, 27,339; total 83,841 tons. Mr. Buckley informed me that from the necessity of hauling freight and passengers through the city of New York, the loss was equal to 100 *miles of travel in time,* with an expense of *fifty miles in the carriage.* This, therefore, is a serious item of expense in railroad travel to the shipping interests. It is a delay, too, which is vexatious and costly, as every one knows who has had experience in such matters, and as every one can see for himself, who reflects on the operation in our own city. First, the locomotive detached miles from the river, then mules hitched to the cars, which are dragged at a slow pace through the city, then put on board a ferry boat by persons specially employed for that service, then landed and attached to locomotives again. This same operation renewed at Amboy and at New York, and hauled through the streets of that city a long distance.

If through a tunnel, we can use steam; all this expense will be saved us in Philadelphia, and this reduced cost will help our shipping interests amazingly. The carrying business will be done cheaper and quicker than it can possibly be on either the New York and Erie or the New York Central Railroad, and produce will very naturally seek this as the most favorable port for export.

I will come now to consider the question as to the means of carrying out this improvement. Here the difficulties are not near so great as are supposed. The Pennsylvania R. R. Co. own the following amounts of real estate, all made necessary to its use by the necessity of hauling its freight into the city.

Real Estate of the Pennsylvania Railroad Company in Philadelphia.

Freight Depot, Thirteenth and Market streets, 250 by 370 feet, equal 92,500 square ft., cost	$280,000	
Thirteenth and Market street building, cost	90,000	
		$370,000 00
Twelfth and Market intended Passenger Depot, lot 187 by 306 feet, equal 52,222 square feet, cost		280,000
Third and Willing's Alley Office, lot 42 ft. 8 in. by 197 ft., equal 8,405 square feet, cost	$42,500	
Third and Willing's Alley building,	120,000	
		162,500
West Philadelphia land occupied and buildings,		200,000
Rent of Passenger Depot, Market st., $6,000, interest of principal of		100,000
		$1,112,500 00
Hauling 486,926 tons of freight and passengers, &c., $69,188 28, representing a principal of		1,153,138 00
		$2,265,638 00

Here 153,127 square feet of ground cost $812,500. The property on Callowhill street to Noble street, and from Front to Delaware avenue, embraces 250,876 square feet of storeroom and depot space, and 164,257 square feet of wharfage with dock room for thirty vessels at one time, and may be purchased for $716,548, or *four times more space* in a better location for about *one-eighth less cost.* The Broad and Callowhill street depot, 238 by 528 feet, or 121,440 square feet, can be purchased for $180,000. Hence, for a cost of $896,524 there can be had 372,316 square feet of ground for depots on the Delaware and on Broad street. The sale of the 153,127 square feet of ground with the buildings thereon, which would be rendered useless to the company when located on the Delaware, would more than pay for the purchase of the property needed for the uses of the company when the tunnel is built. For the sum of $716,548 the company can have on the Callowhill street location 250,876 square feet of store-room and 164,257 square feet of wharfage—making an aggregate of 415,133 square feet of depot and wharf space, besides dockage for thirty vessels at one time. If any more space than this is required, for the increased business of the railroad company, it may readily be found along the whole Delaware front, both up and down the river, where storehouses are already erected for the transaction of any amount of business required. It is not necessary that the railroad company shall purchase any more ground than is above mentioned for all its wants. Private parties, to be benefitted by the business the road would throw in that vicinity, would take care to have the proper facilities necessary to transact it properly. How long would it take and what amount of cost would there be on building up the same amount of storehouses at Greenwich or Washington street, and at what expense would it be to all this property on the wharves already created?

How will this compare with the present facilities for business possessed by the Railroad Company. The freight depot at Thirteenth and Market streets is 92,500 square feet, which is little more than one-fifth the space at Callowhill street, without any dockage room, and cost $370,000. The passenger depot at Broad and Callowhill streets, is 121,440 square feet, more than double the Market and Twelfth street passenger depot, and cost only $180,000.

But this is not all. The Pennsylvania Railroad have a large tract of land in West Philadelphia, which would come into use the moment the tunnel is built. By filling up and levelling, the company would then have 3700 feet of wharfage on the Schuylkill for barges and canal boats.

In these calculations, I have not attempted to show the advantage the plan I have pointed out would be to the city of Philadelphia, a large stockholder in the Pennsylvania Railroad Company, and, therefore, doubly interested in any improvement which comprehends that company and the business and convenience of the city. A stimulus would at once be given to the trade and commerce of this port for it would be the cheapest to send produce to for shipping. Property along the Delaware front scarcely paying the interest, would become valuable again by the increased business on the wharves. With commerce would spring up all the arts and trades which are identified with that interests. There would be life and energy where there are now stagnation and decay. Our beautiful city would be unincumbered by a traffic a hundred times its present extent; the streets would be devoted to the local trade, which would largely increase. Market street and Market street bridge would be given up entirely to local travel. This would give the local travel upon that bridge double its present capacity, and save the expense to the city of a new bridge at Chesnut street. The necessities of the Walnut and Chesnut Passenger Railroad and of other Railroads would compel them to build bridges for their own accommodation over both Chesnut and other streets; consequently, the public would be amply provided with bridges for city travel, without costing the tax-payers a penny.

One word before I close, in regard to myself. It has been urged, as a formidable objection to my plan that it is the design of an individual who is only a builder, and not a railroad engineer. It is true I am a builder, and those who urge this objection will give me credit, I believe, of understanding my business. With sensible people, ability in our department of business, will scarcely be considered a disqualification for understanding the public wants in any other department, or of suggesting the best means for supplying those wants. It requires but little more than the moderate share of common sense with which most men are endowed, to perceive that the shortest route through the city to the Delaware, is the most desirable one, that avoiding the surface, rids both the public and the railroad company of a great deal of annoyance, danger and expense. It requires no great engineering skill to construct an open cut tunnel for the railroad track, and no great amount of arithmetical calculation to determine whether the saving would warrant the cost. In the communications I have presented, the general arguments in favor of the tunnel have been given, and every one is capable of judging of its feasibility. The estimates, carefully made, are before the public, and their errors, if they have any, may be pointed out; the means by which the plans are to be perfected are plain and simple, and even a common builder may see whether they are practicable. I present my plan as the best adapted to the purposes and business of the Railroad Company and the requirements of the city's trade as well as of its interests, best in consonance with the municipal arrangements of a great metropolis and best promoter of its commerce and its trade. If there is any other plan better than this, mine ought not to be adopted. If mine is the best, as I believe it is, and the public seem to coincide in that belief, then I may claim, without presumption, that mine ought to have the preference and be adopted.

S. K. HOXSIE.

[For the Public Ledger.]

Extension of the Water Works.

Messrs. Editors:—Your collector of local matters, although generally correct, is entirely mistaken when he asserts "that the Schuylkill Navigation Company have endeavored to induce the city to enter into a contract with them before the work (of the erection of additional wheels at the mound dam) is commenced, so that the Company might have something to say in reference to the water to be taken from the Schuylkill." "The present Chief Engineer has protested against any such acknowledgment, and his views have been concurred in by the Committee on Water of Councils," &c.

The Schuylkill Navigation Company made no such effort as that above asserted. The facts are that, the Navigation Company asked an interview with the Committee. They showed the committee that they had *the undoubted control of the dam across the Schuylkill, mound, dam and all.* They wished to know what the committee proposed doing. The committee showed them that, so far from their doing anything to weaken the mound dam, they would very materially add to its strength, by erecting a stone wall on the upper side. The Directors of the Company being convinced that the strength of the mound dam would not be impaired, cheerfully consented to the proposed improvement. The Navigation Company can stop the wheels of the Water Works the moment the water ceases to flow over the breast of the dam. This is sometimes the case.

However humiliating it may be to the city to have to submit to the consent of the Navigation Company in this matter, still that Company has its rights secured, and they must be respected. The Watering Committee can have nothing to complain of with regard to their intercourse with the Navigation Company. The utmost harmony exists between them, and the Company showed no disposition to usurp any authority whatever. B. C.

The Engineer of the Water Works.

1859

To the Inquirer:—As the period is approaching when the City Councils will elect the heads of the various Departments, I trespass upon your valuable space to speak a word in favor of the re-election of the Chief Engineer of the Water Works, Henry B. M. Birkinbine. This gentleman, it will be remembered, entered upon his responsible duties a year ago, at which time the several establishments for supplying water were in a wretched condition, owing to the system of management prescribed by *party* rule and intrigue. At that time, it will be remembered, it was proposed to abandon the Kensington works, on account of the foul condition of the basin and the dilapidated state of the machinery. The present incumbent occupied himself in a vigorous personal effort by day and night to the task of repairing and reconstructing the huge machinery employed in pumping ten or fifteen millions gallons of water daily necessary for the supply of the largest city in America. This was successfully accomplished, and the water works will now challenge the inspection and compel the admiration of the most prejudiced. This has been accompanied by a great saving in the working expenses, brought about by the practical knowledge and devoted personal attention of the Chief Engineer, who superintends and closely watches the mechanical operations of the department. In addition to this he has prepared the plans and estimates for the extension of the Water Works, involving an outlay of half a million of dollars, which sum is being expended, in the most judicious and economical manner. He has shown himself willing to accommodate any reasonable want of the public as is proved by the warm interest he has taken in the subject of drinking hydrants on the streets, which we are assured will soon be erected in the manner best calculated to answer the purpose. It will also be borne in mind that during the last year a re-assessment of the water rents has been made, which resulted in an annual gain to the city of nearly one hundred thousand dollars, which went far towards producing the reduction in the rate of taxation on real estate made by the reform party now in power. These are a very few of the many reasons that will suggest themselves to the unbiassed mind for continuing Mr. Birkinbine in the post to which he brought a large store of practical experience, a sturdy integrity, and a thorough knowledge of the science of hydraulics acquired from books and "shirt sleeve" study. I do not desire to say a word in disparagement of the other gentlemen pressed for the position, any of whom possess merits which I can respect and appreciate, but it is the sincere conviction of one who is disinterested, and who has every opportunity of being informed, that the public interests, to say nothing of party policy, demand the re-election of Mr. Birkinbine.

Yours, &c., Fairmount.

Important to the City.—Since Councils have determined to increase the capacity and effectiveness of the water works at Fairmount, by the erection of additional wheels at the mound dam, the Schuylkill Navigation Company have endeavored to induce the city to enter into a contract with them, before the work is commenced, so that the Company might have something to say in reference to the water to be taken from the Schuylkill. The present Chief Engineer has protested against any such acknowledgment, and his views have been concurred in by the Committee on Water of Councils, for the reason that the building of the wheel house along the mound dam does not interfere with the dam across the river, the only thing the Schuylkill Navigation Company is interested in; also, that when the city first entered into a contract with that company there was but one lock at the terminus of the canal below the dam, but since, two have been erected, both of which are much larger than the original lock. The city, under the original contract, was allowed to have all the water in the Schuylkill, except that necessary for the use of the Schuylkill Navigation Company; and, therefore, as the locks have been enlarged and the dam raised, more for the benefit of the canal than the city, the Chief thinks that no other contract should be entered into with the company, as the improvements to be made cannot in any way interfere with any of their rights or privileges. The work at the mound dam will, therefore, be commenced as soon as the water is low enough to allow of the laying of the foundation, and if the present Chief Engineer, who has shown himself active and efficient, should be continued by Councils, the work will be vigorously pushed.

Improvements in the Water Supply, Considered in Connection with the Question of Employment for Labor

[The following paper, on the Water Supply, has been prepared by one of our esteemed correspondents It is worthy of close attention]

It is now under consideration to increase the amount of public work doing by the city, with a view to afford occupation for unemployed mechanics, and this movement has directed itself towards the extension of our arrangements for supplying the city with water. We have endeavored to obtain the materials for arriving at a correct judgment upon the expediency of such a course, and we now lay them before our readers.

A careful examination of the history of our Water Works, from the very commencement, shows that contracted views and inadequate arrangements have been attended with great pecuniary loss, as well as loss of convenience to the city. In 1789, **Franklin** proposed to dam up Wissahickon creek, and bring the water to the city by an aqueduct. In 1799, **Latrobe** made a similar suggestion with respect to Spring Mill creek. Unfortunately, these plans were rejected as being too expensive, and the Centre Square plan was adopted. Of the result of these and the first steam works at Fairmount, it is sufficient to say that, up to 1815 the water rents did not in any one year pay for the fuel consumed and the working of the engines, and the whole experiment sunk for the city not less than $1,000,000.

But, with better machinery, a more enlarged policy and a larger demand, a complete revolution has taken place, and the business of supplying the citizens with water has become one of great and regularly increasing profit. In 1858 the Water Department, after paying every description of expense whatever, including salaries, repairs, and many expenses of permanent benefit, paid over to the City Treasury the sum of $269,540. In 1859 this had risen to $326,540, and as amongst the expenses is charged the cost of the Frankford main, $22,772, the real profit of the year was $348 870. A material portion of this very great increase is to be attributed to the new main laid down Broad street to Washington, for the benefit of the southern portion af the city, and the laying of which was immediately followed by an increase of water rents in the First District, amounting to 20 per cent. on the cost of the main, a sufficient proof of the expediency of putting an abundant supply of water within the reach of householders. In the year 1860 the clear profit paid into the City Treasury was $360,262, an amount which would have been still greater but that the large expenditures for service pipe had not been collected back from the citizens before whose property they were laid, owing to the insufficient means employed for compelling payment.

But the point which strikes most forcibly, after an examination of all the statistics of the Department, is that *the demand for water increases more rapidly than the supply.* The increase of our city goes on at such a prodigious rate, that during the years 1859 and 1860, service pipe was laid (by the request and *at the expense* of the owners) in *thirty-eight miles of new streets;* and this vast amount does not include many miles of supply mains, laid at the expense of the city for permanent benefit, the cost of which is deducted from the above statements of profit. The direct result of such an enormous extension of service pipe has necessarily been to diminish the effective head of water afforded by the works, under an increased consumption. A corresponding extension of the means of supply both in machinery and reservoirs, therefore becomes necessary.

With a view of doing something towards this need, a new mill house was ordered to be built at Fairmount, and here, we think, two serious mistakes were made. In the first place, since the city has become so large, great objections exist to the increase of works at Fairmount. The whole of the Schuylkill, between Manayunk and the dam, answers in many respects the purposes of a sewer. Without entering too much into disagreeable particulars, we shall merely mention that the river down to the dam is often covered with a scum from the various print works at Manayunk (when in operation); also, between the 1st of Jan. and the 1st of July, of this year, one hundred pieces of carrion, dead horses, dogs, &c , were fished out of the river by men employed for that purpose by the Chief Engineer.

In the second place, the original plan was to have made the mill houses similar to the old one, at a cost of under $20,000 This was changed, and the house was built of stones and iron, involving an increased cost of fully $50,000, an addition of over two hundred and fifty per cent. This money, we think, might have been more judiciously expended; a few hundred dollars a year for repairs are avoided, but the interest on the extra cost amounts to ten times as much. 284

But as the erection of this mill-house will be altogether insufficient for the needs of the city, a committee was appointed last winter, by Councils, and reported various necessary improvements, amounting to five hundred and twenty-five thousand dollars, on which Councils did not act.—Should Councils now decide to do something, it is probable that this report will be to a certain extent the basis of their decision. But in one respect the plan is very incomplete, and was made so to keep down the expenditure. A more enlarged policy would appear to be the true one, and we wish to bring the matter before our readers that it may receive the discussion which its importance demands.

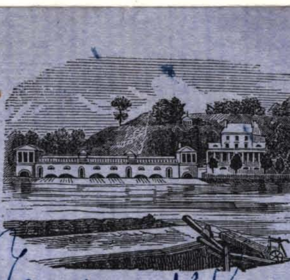
The report of the Committee includes a work at Flat Rock, for the supply of Manayunk, now wholly unsupplied and exposed to great danger from fires. But the question presents itself: if we make them works, why should we not put the large Cornish engine, now proposed to be built at the Spring Garden Works, at Flat Rock instead, and so arrange as to supply not only Manayunk, but Germantown and all the northern part of the city? The quality of the water at Flack Rock is much purer than below, and we gain all the additional height, representing the difference between the level of the water there and at Fairmount. Besides this, it is peculiarly easy to build a reservoir at Flat Rock; it is only necessary to dam up a ravine and the work is done. Another most important consideration is the fact that some provision is becoming absolutely necessary for the northern part of the city. There the levels are so much higher that the existing reservoirs cannot afford the necessary head, and unless some such arrangement as that at Flat Rock is made, a complete alteration will become necessary in the existing reservoirs, which must be very materially raised. If the Flat Rock reservoir be built at all, it will be over one hundred feet higher than the Fairmount, and a thirty-inch main brought down to the city would give a splendid supply to all the northern Wards, and so much relieve the existing works as to give an ample and abundant provision for all the rest of the city.

The additional cost of such a plan, over the estimates of the committee, would be $300,000, involving an interest account of $18,000. We understand, upon good authority, that the Germantown Works would be willing to pay $10,000 a year to have water supplied to their works, to be raised the additional height necessary by themselves. This would leave but $8000 interest chargeable upon the alteration, and it is safe to say that this sum would be repaid many times over by the increase of water rents, not at a distant future, but from the very moment of the completion of the works. We believe that we state the opinion of the Chief Engineer of the Department in saying that this is the true economy which the occasion requires. When we reflect that the laying of the main to Washington street, at a cost of $126 098, produced an immediate increase of water rents in the portion of the city which it assisted, amounting to $24,269, or nearly one-fifth the cost returned in the first year, we see that the true policy of the city lies in affording a liberal supply. If this is true merely as a question of dollars and cents, how much more so is it if we take into question the convenience of the citizens, the advantage to public health and the increased security from fire?

As yet, all these advantages are possessed in only a moderate degree. The central portions of the city are pretty well off, though even in them the water fails in the upper stories But in other parts of the city the case is very different. It is supposed that from manufactories alone an increase of rents of near $50,000 could be obtained if the supply was what it should be. The people of Kensington get an insufficient supply of water, and what they get is often very foul, as the wharf wash is pumped directly into the mains. West Philadelphia is liable to be burned down at any time, as the supply is so irregular that many people will not take the water at all, but rely on wells. In the northern part of the city the water will not rise to the upper stories. In Manayunk and Roxborough 12,000 people are almost without water; in Manayunk the evil is especially great, as the wells are contaminated and the town liable to destruction by fire.

To cover all the improvements recommended in the report of Committee, made February 5, 1861, and including the Flat Rock Works, described more fully in the Report of the Chief Engineer, February 9, 1860, page 109 and following, the estimated sum is $825,000, which might probably rise to $900,000. From a candid and painstaking investigation, we are inclined to think that this money would be well spent, but we particularly invite the attention of men of property, tax payers, to the whole matter, that they may aid Councils in intelligently considering it, and arriving at a right decision.

Before taking leave of this subject, it is proper to say that many persons most conversant with these matters argue that the true policy of the city would be to dam up Spring Mill creek, and bring the water by an aqueduct to the city, thus dispensing with all pumping machinery whatever. The difficulty is the cost, which is roughly estimated at $5,000,000. Upon this point we have no sufficient information, and are not prepared to express any opinion.



DEPARTMENT
For Supplying the City with Water.

Philad'a, 10 January 1860

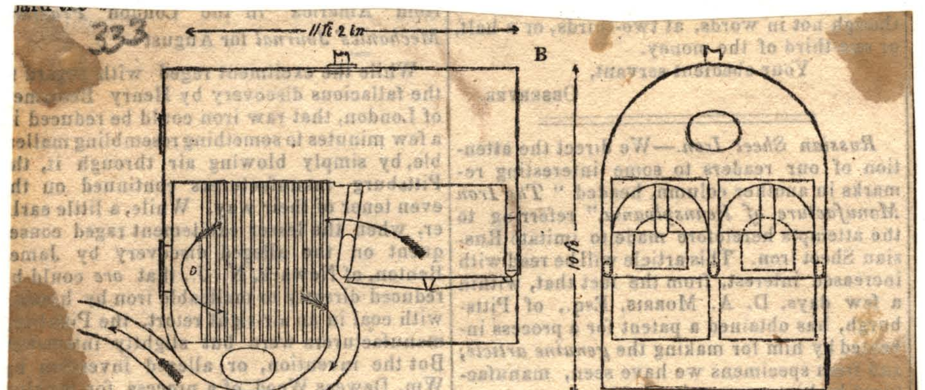
Frederick Graff Esqr.

Sir

I took a trip out to Fairmount this Morning to look at things &c. They Are trying Turbine Wheels yet. they were putting One in for trial from Guilford N.Y. The Say Andrews' Wheel from Bucks Co beats them all 74 pr Ct. 10 Wheels have been tried already and more still Coming for trial. Wheel No 6. is Torn Out Sheating & Buckets are all off. Birkinbine Discharged Parker day after New Year. O.H. Parker & Birkey are not on good terms. O.H. Parker wants to be Chief Engineer &c. The Stairway from Garden to top of Basin is to be taken away and an Inclined plane put there instead. Erdman & Birkey made the Survey together also an inclined plane from gateway on Callowhill St.

They Have Built a Bridge Across the gulley where the Pumping mains Run up to Basin — I got all my information from Peoples —

Yours &c G. Neil



New Inventions.

Ericsson's Hot Air Engine.

It is now twenty-five years since Capt. Ericsson was first introduced to the public as an inventor and improver of the hot air engine, and if ever an inventor deserved success, he certainly does. The resolute perseverance and ingenuity which he has displayed have at last led to the production of an engine which does him a great amount of credit. It is represented in the accompanying engravings, of which Fig. 1 is a perspective view of the entire engine. Fig. 2 is an enlarged longitudinal view of the "supply piston." Fig. 3 is a plan view of the cap of this piston, and Fig. 4 is a plan view of the outer face of the "working piston." There is a great amount of originality displayed in the mechanical details, and in the principles of operation embraced in this caloric air motor; it is in many respects different from all others which have preceded it, and deserves very general attention.

The engraving represents a horizontal single acting engine with one cylinder, the latter fulfills the offices of feed pump, prime mover, heater, and air chamber. Any number of such cylinders may be yoked to one shaft, but this one is complete in itself. Though single-acting and horizontal, it communicates a very equable motion to a main revolving shaft—a result very difficult to accomplish.

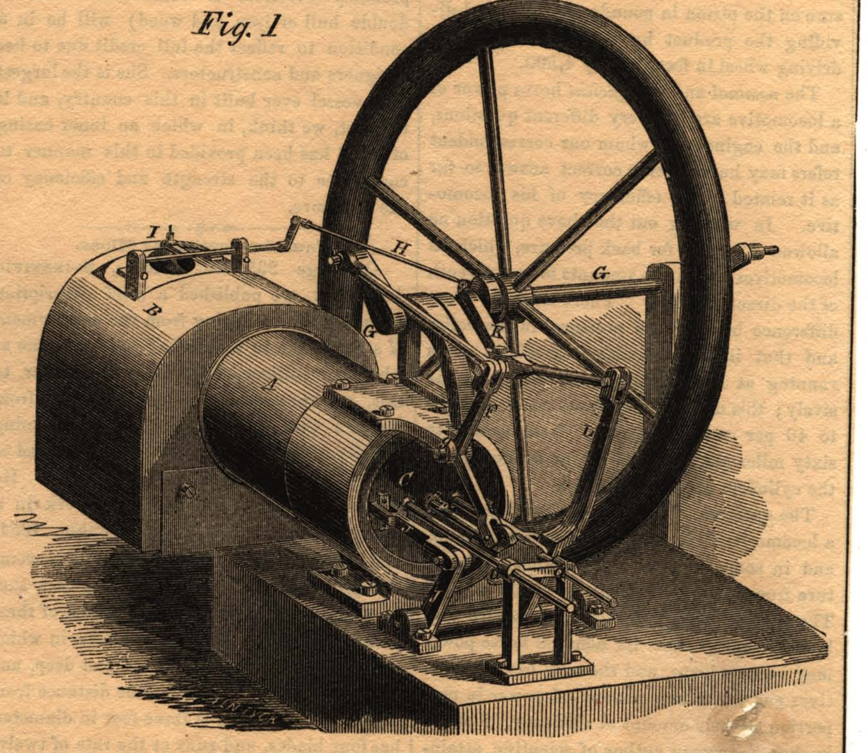
The cylinder, A, is prolonged and has its back end (which forms its air heater) inclosed in the furnace, B. There are two pistons in the cylinder, the outer one, C, is called the "working piston," and also forms a movable cylinder head. It has a spring valve, D, Fig. 4, in it for admitting cold feed air into the cylinder at each return stroke. The "supply piston," E, Fig. 2, is elongated and has a curved end next the heater—the end of the cylinder is also of the same form to allow for expansion and contraction of the metal. The rod, P, of this piston works through a stuffing box in the piston, C, Fig. 1, and is connected to one end of the angular lever, F, which vibrates on the pin, *g*; the other end of this lever is attached to the crank on the main shaft, G. The cap, *f*, of the piston, E, has an opening at its rim, and a circular recess behind it. In this recess there is a ring, *e*, which slides back and forth on stud pins. This ring closes the opening in the cap when the hot air pressure is operating the piston; when it exhausts at the end of a stroke, the cold air by atmospheric pressure rushes in to supply the partial vacuum, pushing open the spring valve, D, and the ring, *e*, thence passing through the recess and down between the piston, E, and the cylinder, to be heated for the next stroke. In this manner the cold air is fed in. When the expansive pressure of the hot air has moved the piston to the end of a stroke, at that instant the oscillating rod, H, attached to the main shaft opens the exhaust valve, I, on the back end of the cylinder. By the peculiar combination and arrangement of the angular levers with the two pistons, C and E, and their rocking shafts and the cranks on the main shaft, the supply piston, E, moves back, following the exhaust with a speed three times greater than that of the working piston, C, so that there is always a space between the two that is filled with air, which forms an elastic cool cushion between the pistons, C E. These move with variable speeds back, but nearly uniform forward. As the air is flowing in through the valve, D, by atmospheric pressure, whenever the back pressure exceeds this, the valve closes itself. The piston, C, has two guide rods moving through eyes, *a a*, in standards. There is also a vibrating angle lever, J, attached to this piston at each side of the guide rods; they are connected to a rocker shaft at the foot, and an oscillating lever, L, connected with a crank pin, K, on shaft, G. These mechanical devices and their peculiar arrangement cause the variable motions of the supply and working pistons described. And although they are represented connected to two crank pins on the main shaft, G, Capt. Ericsson has in some of these engines united them to one crank pin, and produced the same variety of motion.

Every mechanic will at once notice the novel mechanical arrangement of the angle levers with the pistons and main crank pins. The form of the piston, E, prevents it from being readily injured by a high heat, and as there is an air recess between the two pistons, the working one, C, is kept perfectly cool.

It may be supposed by some persons that the feed of the cold air will be comparatively slow, but air rushes into vacuo at the rate of 1,300 feet per second, a hundred times the piston velocity of our fastest steam engines. There is undoubtedly a great deal of back pressure in the cylinder, but there is also considerable in every steam engine. It cannot carry such a high pressure as a steam engine, but we have been assured that although air requires to be heated to about 500° Fah. to double its volume and exert a pressure of 15 lbs. on the square inch, that a much higher pressure has been carried in these engines without injury to any of the parts, by a high temperature.

ERICSSON'S IMPROVED HOT AIR ENGINE.

Fig. 1



In regard to a variable increase of power, this has not the flexibility of the steam engine. Thus a non-condensing steam engine, if its boiler is sufficiently large and strong, can be worked at from thirty to one hundred pounds pressure, with a triple increase of power from the lowest to the highest pressure. This flexibility is very necessary and convenient in some factories where there are several machines that have to be stopped at intervals of some days, while others are kept running. But for constant small portable engines, capable of being applied to a great number of useful purposes, such as pumping water, driving portable grain mills, &c., this caloric engine appears to be a safe, economical, and convenient engine. Any boy or laborer who has sense enough to kindle and take care of a fire can take care of it; the fire has but to be kindled and in about from ten to fifteen minutes it will be ready to run. If left to itself it will stop when the fire goes down, and neglect cannot cause an explosion, because a charge of air has to be heated for each stroke.

Fig. 2

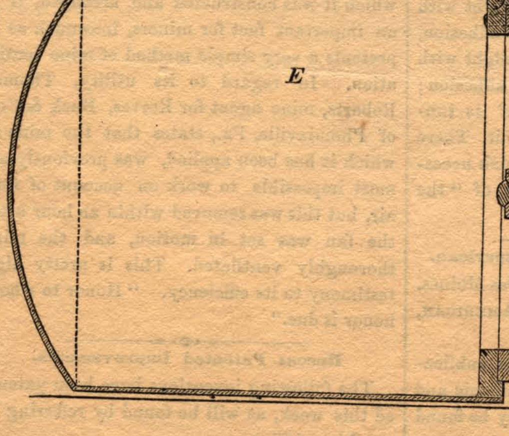


Fig.3

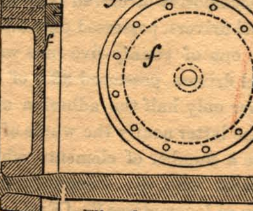
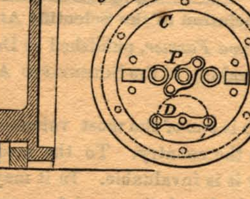


Fig.4



It will be noticed by many of our constant readers that this caloric engine differs from all its predecessors. On page 153, Vol. 8, Scientific American, there is an engraving of Capt. Ericsson's hot air engine patented in 1833; on the succeeding page, 154, a figure of the one patented in 1850, and on page 180, Vol. 11, an illustration of the one patented in 1855. In all these a *regenerator* to take up the caloric of the exhaust air was employed, while in the above illustrated engine there is no regenerator; it exhausts direct—like a non-condensing steam engine—into the atmosphere. In reference to this mode of employing hot air, we said on page 181, Vol. 11, Scientific American, "The best way to use hot air as a motive agent appears to be to work it expansively as far as this can be done, then exhaust into the atmosphere." This idea is carried out in this engine, it is therefore rendered more simple, more efficient, and it costs much less to manufacture. In former hot air engines it was impossible to prevent the valves from leaking; this difficulty seems to be overcome in this one, as it has been running for several months without requiring any repairs or alterations; this is a very important point. One of these engines is now employed by the Metropolitan Bank of this city, for pumping water, and we have been informed it gives a high degree of satisfaction.

137

Turbine Wheels.

MESSRS. EDITORS:—You will oblige me by publishing the following condensed statement, showing the position of the minority of the committee on water works, relative to the contract for new turbine wheels. It is a complicated subject, and the reporters of the late debate were unable to give a clear synopsis of it. J. E. Stevenson was the successful competitor in the late trials of wheels, but the contract was given to E. Geyelin, whose wheel was the second best. Stevenson petitioned Councils on the subject. His petition was referred to the watering committee, and two reports made. The minority took the position that Stevenson should have had the contract awarded to him. Their statement is briefly this:

"The department having concluded to erect three turbine or other wheels at Fairmount, they determined that the city should avail itself of the latest and best improvements in water wheels. The committee therefore instructed the Chief Engineer "to notify by letter or otherwise *all competitors* for building turbine or other wheels, to be placed in the new mill-house at Fairmount, that they will be required to furnish the said Engineer with an exact working model of their wheel or wheels, according to the scale adopted by said Engineer, under the direction of the committee on water works. And the said Engineer is hereby authorized and directed to make the necessary arrangements for testing the said model wheels, so as to determine the per centage of power produced by each wheel respectively; and he is also required to examine into the mode of construction, with a view of ascertaining which wheel will be the best adapted for propelling the pumps in the most simple and durable manner, and to make a full report of his examination to this committee."

This notice having been published in the Scientific American of June 4th, 1859, several persons signified their intention to become competitors. All such were subsequently informed by the Chief Engineer, that the experiments would be commenced by the first of August, and he stated to them "that these experiments are undertaken to determine the wheel that will be best adapted (all things considered) for our Fairmount works." "*Two of the wheels approved of will be ordered immediately.*" It will be observed that not one word was said about the cost of the wheels, the great object being to obtain the wheel that would throw into the reservoir the most water under the same head. The persons who conducted the experiments were the Chief Engineer and the Chairman of the Committee, O. H. P. Parker, a wheelwright himself of twenty years' standing, and therefore a most competent person to conduct the experiments. When the trials were ended, the Chief Engineer reported to the Committee "*that the best result was procured from the Jouval wheel, made by J. E. Stevenson, of Patterson, New Jersey which gave an actual useful effect of the power employed, of nearly ninety one per cent.*"

During the continuance of those trials which lasted six months great interest was excited amongst Hydraulic Engineers and wheel builders, as to the result, and every pains were taken with the models to make them the most effective. The Chairman of the Committee also declared "that J. E. Stevenson's wheel did give the *best result on every trial.*" He also testified that "this gentleman is an able mechanic, and I think he understands the *Jouval Turbine* better than almost any other builder in the country." This was magnanimous in one whose family discovered the principle of the Juoval Wheel, and held the patent in the United States till within a few years. The Parker wheel was at the trial, and beaten by Stevenson's. The figures given by the Chief Engineer are these:—Viz: E Geyelin's wheel raised a weight of 1,009 lbs. 25 feet high, by 81.19 cubic feet of water falling 6 feet, in 26 minutes, which gives the ratio of .8210. J. E. Stevenson's wheel raised a weight of 925 lbs. 25 feet high, by 70.25 cubic feet of water

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produced by the wheels to the pumps, is also of a massive character, the counter-shafts being twelve inches diameter, and the crank shafts sixteen inches diameter at their ends, and eighteen inches diameter at their middle. The fall at Fairmount varies with the different states of the tide in the river, from 6 to 14 feet. Each Turbine is, however, rated at 100-horse power, with a fall of 8 feet. A portion of the above described machinery is in its place at Fairmount, and the remaining portions are nearly completed at the works of Messrs. I. P. Morris & Co. and Messrs. Hoff & Fontaine, near Girard avenue. A duplicate of the shaft and small moving and stationary wheels for the Saltillo mill mentioned above, is also at Messrs. I. P. Morris & Co.'s, awaiting an opportunity to be forwarded to its destination.

[For the Public Ledger.]

May 24

Fairmount.

MESSRS EDITORS:—I was much pleased with the remarks of your correspondent, relative to the blasting of rocks, and other so-called improvements, now being done, or proposed to be done, at Fairmount. The blasting of the rocks should be discontinued at once, they being both useful and ornamental. Can it be that their value for building purposes has anything to do with their removal?

On a warm afternoon a week or ten days since, while at Fairmount, being desirous of procuring a drink of water, I proceeded to the fountain, and there found eight persons waiting for their turn to drink. It would add but little to our present taxes to provide a few additional fountains, for the accommodation of the public. If there is such a scarcity of water in the reservoirs, that additional fountains cannot be permitted to be made, I would respectfully suggest that the Superintendent be instructed to provide small buckets and cups, at the summer house, near the dam, so that visiters can supply themselves from the river. ANTI-LAGER.

200

SUPPLIES TO THE WATER DEPARTMENT OF THE CITY OF PHILADELPHIA.

SEALED PROPOSALS will be received at the Office of the Department, No. 918 CHERRY Street, for the necessary IRON PIPE, IRON CASTINGS, BRASS CASTINGS, LEAD, GASKET, COAL, OIL and TALLOW, that will be required for the year 1860, until TUESDAY, February 21st, 12 o'clock, noon.

"IRON PIPE, BRANCHES, &c."

Such amount of Iron Street Mains, Branches, &c., as may be ordered by the Chief Engineer. The metal to be of such quality as will admit of being readily drilled or cut; free from all imperfections, and cast from such patterns, furnished at the expense of the contractor, as the Chief Engineer may approve of. Each pipe must be proved to a pressure of three hundred feet of water, and delivered to his order, in the City, free from all charges. The Pipe to be as follows, viz:

3-inch pipe, in lengths of	9 feet, and	weighing	130lbs.
4-inch "	" 9 "	"	190 "
6-inch "	" 9 "	"	310 "
8-inch "	" 9 "	"	420 "
10-inch "	" 9 "	"	490 "

The amount required will be, say about one hundred thousand feet, with the necessary Branches, Turns, &c. Pipe to be estimated for by the foot. Branches, Turns, &c, by the ton of 2240 lbs. The full average weight will be required; any Pipe weighing less than four per cent. below the average weight will, in all cases, be rejected.

"IRON CASTINGS."

Such Iron Castings as may be ordered by the Chief Engineer, for Stop Cocks, Stop Frames and Covers, Fire Plugs, Cases, &c., to be delivered at the Shop, 918 Cherry street. Amount required will be, say about 150,000 lbs.

"BRASS CASTINGS."

Such Brass Castings as the Chief Engineer may order for Stop-cocks, Fire-plugs, Ferrules, Plugs, &c., to be delivered at the shop, 918 Cherry street. Amount required will be, say about 8000 pounds. Bids must state the composition of the brass that will be supplied.

"LEAD."

Such amount of Pig-lead as may be ordered by the Chief Engineer, to be be delivered at the yard 918 Cherry street. Amount required will be, say about 100,000 pounds.

"GASKET."

Such amount of Gasket for laying pipe as the Chief Engineer may order, delivered at the yard, 918 Cherry street. Amount required will be, say about 5500 pounds.

"COAL."

Such amount of Anthracite Coal as the Chief Engineer may order for the use of the different Works, say—

For Schuylkill Works, about - - -	4,000 tons.
" Delaware " " - - -	2,000 "
" Twenty-fourth Ward " - -	800 "
" Fairmount Works, " - -	60 "

The coal to be delivered at the several Works, and must be of the best quality, lump or steamboat, and free from slate, bone, &c. Bids will be received for the supply of each Works separately, and must state the kind of Coal to be supplied.

The Coal will be weighed at the Works (when delivered) by an agent of the Department. Estimates to be made per ton of 2240 lbs.

"OIL."

Such amount of Sperm or Lard Oil as the Chief Engineer may order for the different Works, to be delivered at the several Works. Amount required, say about 500 gallons.

"TALLOW."

Such amount of Tallow as the Chief Engineer may order for the use of the Works, to be delivered at the several Works. Amount required, say about 4000lbs.

The bids for the above supplies must be endorsed, stating what they are for.

The Chief Engineer reserves the right to refuse any article which is not in every respect satisfactory, or what it is contracted to be. Else to refuse any or all of the bids, or make such disposition of them as may be to the interest of the Department.

HENRY P. M. BIRKENBINE,
Chief Engineer.

fe16-18-20-3t

The Schuylkill Water Works.—The cornish engine, at the Water Works in the old district of Spring Garden, is one of the finest and most powerful in the country. It has a cylinder of 60 inches in diameter, and 10 feet length of stroke. The diameter of the pump plunger is 30 inches, with 10 feet stroke. The plunger, which forces the water up, produces a pressure upon the water of 35,3?0 pounds, and with 100 pounds of coal, 53,000,000 pounds of water is raised one foot high. The engine consumes 100 pounds of coal for every 150 strokes she makes, each stroke raising 366 gallons to the reservoir, a height of 115 feet—making a total of 54,900 gallons of water for every 100 lbs. of coal used.

THE AUDITOR appointed to audit, settle, and adjust the account of CHARLES DUTILH, FREDERICK GRAFF, and WILLIAM S. VAUX, Executors of the last will and testament of ANN M. GRAFF, deceased, and to make distribution, will attend to the duties of his appointment on TUESDAY, the 19th day of April, A. D 1859, at 4 o'clock, P. M., at the Office of WILLIAM S. VAUX, Esq., at the N. W. Corner of SEVENTEENTH and CUTHBERT Streets, in the City of Philadelphia. ap7 thstu 5t

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The Laying of the Water Main on Broad and Prime streets, so as to supply the lower section of the city with water, has been completed, with the exception of making the connection at the reservoir. The entire cost of this work, for pipe, labor, &c., was nearly $105,000, or about $7 per foot. This falls short of the appropriation for doing the work about $15,000.

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under the title of the Senior Girard Brotherhood.

Ledg. April 21/60

Will Not be Granted.—We understand that the Committee of Councils will refuse to grant permission for the erection of a pavilion at Fairmount, for the purpose of having music in the grounds, as was adopted last summer. The extension of the promenade on the mound dam when completed, will be allowed for this purpose. This promenade, which has heretofore been but 15 feet wide, will be extended to 85 feet, by extending it over the top of the mill houses now being erected on the south side of the mound dam.

Charge Against an Alleged Pickpocket.—William

Mercury Jun 17/60

BIRKENBINE ALARMED.

Birkenbine is scared. He has unchained the fountains in Fairmount Park on Sunday. This is in clear violation of the Chief Engineer's religious principles. He is fully convinced that the fountains are sinful when they play while the church-bells are ringing. But fearful that such a silly prohibition as he enforced upon the erratic waters might endanger his prospects of re-election, he has decided that "rigid righteousness" will not *pay*, and has relaxed accordingly. The motives that govern the present course of this miserable functionary are as contemptible as the former act of silencing the prattle of the fountains on the Sabbath day. Grant him another lease of office and another chance at extra appropriations, and he will return the Sunday ice to the musical waters, and do penance for his present sin by driving the birds out of the Park on Saturday night.

But we have more conclusive evidence of the apprehensions of defeat entertained by the present Chief Engineer; and to this we ask the particular attention of Councils. There is really only a single candidate in direct opposition to Birkenbine—and that is Frederick Graef. But three others have been started by the Chief Engineer to divide the opposition, to collect a few votes each, and, in the end, to transfer their strength to the obnoxious official, and thus secure his triumph. Mr. John Overn, one of these bogus candidates, is an engineer who is now employed in the Water Department. He is devoted to the interest of Birkenbine. His father is Samuel Overn, steward of Girard College, and it is expected that the two can exert considerable influence in Councils. O. H. P. Parker is the second candidate, whom, we have reason to believe, is really favorable to the re-election of Birkenbine. Mr. Parker has a turbine wheel, which the present Chief Engineer has elaborately lauded. The third candidate in the same interest is Mr. Frederick Erdman, who has been Chief Engineer of the Department, and who has a son employed under Birkenbine. This artful combination is the evidence of the puritanical Birkenbine's alarm. He is now convinced that in a square contest with Frederick Graef, the triumph of the latter would be reduced to a certainty. Hence, the effort to draw off from Graef's support by putting forward decoy candidates. We trust that the members of Councils who belong to the dominant party, and who really wish to defeat B., will be warned by this exposure, give the decoys the cold shoulder, and vote directly for the candidate who will entirely change the administration of the Water Department.

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step of a house in Arch street, above Eighteenth.

206 6th June/60

[For the Public Ledger.]

Trial of the Water-Wheels.

MESSRS. EDITORS:—I was glad to find, from your report of the proceedings of Councils, that Mr. Beideman offered a resolution, which was passed, instructing the Chief Engineer of the Water-Works to report a detailed statement of the result of the experiments made of the Turbine wheels. These experiments have awakened much interest on the subject of water-wheels, and it was a very timely motion to have a report made public. Great skill was shown in preparing the models, and, of course, a commendable spirit to excel was manifest on the part of the competitors, as it was understood that the wheel which produced the best coefficient of power would be adopted. It is insinuated that the Committee on Water-Works are inclined to adopt the second best wheel, because the owner lives in this city. But this cannot be true, for the invitation to compete was not confined to this city, as we learn, but to the whole country. We have too high an opinion of the Committee on Water-Works to suppose that any preference would be given upon account of the residence of the owners that the merits of the wheel would not warrant. But the test has been made, and made fairly, as to the power of the wheels, and that wheel which produced the best results will be adopted, no matter where the author came from. The reputation of the city is at stake in this matter, and no consideration should prevent, and we opine that none will prevent, the Chief Engineer from reporting the wheel which showed the best results during the trials. HONOR.

[For the Public Ledger.]

205
Mercury June 3/60

BEHIND THE MUNICIPAL SCENES.

A SCRABBLE FOR IMPORTANT OFFICES.

The "tree-frogs" upon the Boulevard Maison d'Etat are croaking and chirping with more than usual vivacity. The button-hole discussion between drinks is animated and protracted. Certain chiefs of departments have become uncommonly urbane and genial, and manifest a fraternal affection for every individual who either has a vote, or may control one, in Councils. Mysterious and whispering conclaves of contractors, jobbers, clerks and Councilmen assemble in the various offices to discuss the chances of candidates, or bargain for essential support. The cause of this sensation is the approach of the period for the "People's" majority in Council to elect candidates for the offices of Chief Engineer of the Water Department, Chief Commissioner, and two subordinate Commissioners, of the Department of Highways, and Commissioner of City Property. The choice of the caucus is almost certain to be the choice of Councils at the time fixed for the election. Hence, the agitation hardly reaches the Democrats, and it is only the "tree frogs" affiliated with the dominant party that are so noisily exercised on this occasion.

The candidates for the position of Chief Engineer of the Water Department are H. P. M. Birkenbine, the present incumbent, Frederick Graef and O. H. P. Parker. We have expressed our deliberate estimate of Mr. Birkenbine. He is understood to have the inside track for the caucus nomination, notwithstanding his notorious incompetency, silly bigotry and decided unpopularity. He is using all the means at his command and lavishing promises of office and fat jobs in every direction where he supposes the prospect of patronage will favor his interest. The re-election of such a functionary would be disgraceful to the dominant party, and we yet hope that there are men among the majority who will not contribute their aid to any such result. Mr. Parker is an excellent man, but he has little or no experience to qualify him for the position, and will not be seriously pressed. Mr. Graef is Birkenbine's most formidable competitor, and the man who ought to succeed. Mr. G.'s management of the affairs of the department was honest, skillful and laborious. He is a sort of hereditary engineer, and knows more about the Fairmount water-works than any individual who can be mentioned in the same connection. His long and thorough experience, faithful service and first-rate administrative qualities, eminently fit him for taking charge of the works, and completing, in an economical and satisfactory manner, the improvements over which Birkenbine has blundered and floundered, until nobody knows the limit of the cost or the character of the work that has been performed. Mr. Graef is warmly urged for the position by his friends, who have tested his worth, and we do not yet despair of his election.

Whitney.

Ledg. 14 Mch 1860

The Water-works—Action of the Finance Committee.—The Finance Committee of Councils held a meeting on Monday evening for the purpose of considering the proposition to report an ordinance creating a loan of $364,000, for the completion of the improvements to Fairmount Water-works, and also to erect additional power at Spring Garden Works, so as to dispense with those at Kensington. A discussion ensued in reference to the Fairmount improvements, and the necessity of appropriating $64,000 more than was estimated by the Chief Engineer, during which it was stated that the raising of the reservoir at Corinthian avenue had exceeded the estimate $19,000 because it was found that a much more expensive foundation was necessary to sustain the additional weight than was first anticipated; also that the estimate for the building of the mill-house at the Fairmount mound-dam had been exceeded, not only by making the house larger, so as to accommodate an additional Turbine wheel, but that the retaining wall, in which the gates are inserted, had been increased to five feet thickness in consequence of the action taken by the Schuylkill Navigation Company. After some further discussion the Committee concluded to abandon for the present the removal of the Kensington Works, and report to Councils on Thursday an ordinance creating a loan of $64,000 for the completion of the improvements now begun.

Dispatch

Birkinbine.

There was a debate in Select Council, last week, upon the character of this man as a practical engineer. The wholesale spoliations and changes which he inaugurated at Fairmount were authorized by under-estimates, which it is notoricus were grossly deceptive. Instead of calculating the *entire* cost of the proposed work, it is now known that Birkinbine only estimated for a part, leading Councils to suppose that everything needful was taken into consideration. We have already seen that the estimates made were very inaccurate when contrasted with the work already done, and far under the real amount required. The items that it is now said were not taken into consideration, will involve an increase of appropriations of many thousand dollars. Last week, $6000 more than was originally suggested for one part of the work were demanded merely for finishing the mill-house. But it leaked out in the debate that a large sum will be necessary for a new main to connect the works with the upper basin. This item was particularly specified in the ordinance, and it was supposed to have been estimated for, but it is now declared that no notice was taken of this expensive work; and after imagining that the whole of the supposed cost was calculated, it turns out that several thousand dollars more will be needed for this main. The fact is that Mr. Birkinbine has been guilty of fraud in making the estimates, and has deceived Councils upon this vital question of cost. His object may be easily imagined. It was two-fold: First, to have within his control expenditures much larger than the work at Fairmount would justify; and Second, to insure a new job when the increased sum for the new main was voted. In defiance of this matter, which shows that Mr. Birkinbine is incompetent, he is strongly pressed for re-election by certain interests which have a stake in the money dispensed under his direction. Whether this plot will succeed, and whether the city will be injured by the continuance in office of a person who blunders most atrociously in his estimates, and who acts with pharisaical illiberality in the management of the public grounds, time will determine. The people will look upon the re election of Birkinbine to the office of Chief Engineer of the Water-Works as a defiance of economy and propriety, and an insult of the grossest kind.

THE MERCURY

Sunday Morning, June 10, 1860.

A BLOW AT BIRKENBINE.

Friend Neal, of the Thirteenth Ward, is occasionally crochetty, but we admire the rigid honesty and general good sense displayed in his course as a member of Select Council. His bold denunciation, on Thursday, of the incompetent individual who presides over the department for supplying the city with water, was particularly gratifying. The occasion of the attack was the proposed transfer of an item of only six thousand dollars, in a former appropriation, to enable the department to complete the wall of the mill-house at Fairmount. Mr. Neal truthfully said that the necessity for this change had arisen from the false estimates of Mr. Birkenbine. When Messrs. Riley and McIntyre came to the rescue of the assailed functionary, they were easily silenced by a simple reference to the facts. Of course, the transfer was authorized as being essential to the completion of the work. But here this method of proceeding with public improvements ought to terminate. Mr. Birkenbine has blundered in the same way throughout his official career. Councils have never been satisfied that they could rely upon his estimates for any purpose whatever. After appropriating sums that the Chief Engineer has designated as sufficient for particular objects, our municipal legislators have always discovered that still further appropriations were required to accomplish the work in hand. We accept the demonstration of Mr. Neal as an assurance that he, at least, will not vote to continue Mr. Birkenbine in office; and we trust that other members will display their good sense and love of honest and competent management, by repudiating the obnoxious functionary, either in caucus or open council, when the question of electing the head of the Water Department recurs.

The New Mill-House at Fairmount and the Turbine Water Wheels.

To the Editors of the Sunday Dispatch:—Having in my last communication on this subject shown the inducements that were held out by the city, through her recognized officials, to manufacturers of turbine water wheels residing at a distance to build models and bring them here for trial, I now propose to exhibit the injustice that is about being consummated by these same officials, in giving the contract for furnishing the wheels for the new mill-house at Fairmount to a resident of this city, after it has been proved by the trials or tests of the models that such an act would be the grossest wrong to a gentleman every way worthy of respect and confidence.

Did not the city of Philadelphia hold out the inducement to builders of water-wheels residing in other parts of the country, that if they would prove, by the trial of a model, the superiority of any wheel they might produce, they would be entitled to and might expect the contract for putting up their wheel at Fairmount? The Chief Engineer's letter says: "These experiments are undertaken to determine the wheel that will be best adapted, all things considered, for our Fairmount works; two of the wheels approved of will be ordered at once." Now what does this mean? Could any gentleman to whom such a letter was addressed put any other construction upon it than that, if his model gave the best per centage of power or useful effect, and was as well adapted in all other respects to the propelling of the pumps at Fairmount as any other wheel offered, he should have the contract? Would any one of common sense build a model, the cost of which is some three hundred dollars, bring it from a long distance, (one gentleman came from Texas,) leave his business for months, pay traveling expenses and hotel bills while awaiting the result of the trials, if he dreamed, that, after he had shown by the tests that his wheel was the best, provided a Philadelphia manufacturer produced the second-best wheel, *he* need not expect to get the job?

Such a conclusion would be simply preposterous; and had such a proviso been inserted in the Chief Engineer's letter, not a man would have gone to the trouble and expense of making a model and bringing it here. I now ask the citizens of Philadelphia if they are satisfied to permit their good old city to be placed in such a position? Is Philadelphia to be stultified? Shall it go forth to the world that we have induced, by flattering promises, worthy and honest mechanics to leave their homes and families, their business and their friends, to come upon a long and expensive journey for nothing? Is this the way Philadelphians expect to maintain their reputation for fair dealing?

But let us examine this matter a little farther. Is a model a fair test of the power of a wheel? If it is not, the trials should never have been authorized. But the answer to the question may be had by examining a little into the construction of the models. The Geylin model was gotten up expressly to give the highest per centage of power. The upright shaft used was a hollow piece of gas pipe with steel pinions welded into the ends, to run upon. The step was a piece of lignumvitæ three quarters of an inch in size, and the buckets were made of sheet brass. Of course the lighter the shaft the less friction. The smaller the step the less it would heat, and consequently the less friction; and the lighter and more finely finished the buckets the less friction or resistance. With all these advantages the wheel only produced 82.10 per cent. Any one can perceive at a glance, from the above statement (which can all be proven), that this wheel was never intended as a working wheel, but merely a highly finished piece of machinery, gotten up expressly for the occasion, and to be thrown aside as soon as the experiments were over. How was it with the Stevenson wheel? The upright shaft used was a solid piece of iron, the step two inches square, and the buckets good iron buckets, fit and able to do the work. In short it was a working wheel, finished undoubtedly in the best manner, and arranged to make the most complete work, such a wheel as may be put up and run for years. Thus you perceive the difference in these two models—the one delicate, fragile, made for the hour, that would not last three days if put to useful work, and even with all this yielding but 82.10 per cent. of power; the other strong, firmly built, capable of being placed in a wheel-house and doing its work for years, and still yielding 87.77 per cent. of power. And yet one of the arguments used by the gentlemen comprising the majority of the committee, is that models are not reliable tests. Which of these models is most likely to be reliable? It has been fairly proven by the result of these trials, that the constructor of the 82.10 per cent. model has not the genius, with all the advantage he has taken in constructing it, to make it yield more. Under these circumstances, is there any right, any justice in the action of the committee, and is the city of Philadelphia to be disgraced by its decision?

There is another argument made use of by the friends of the Geylin, or 82.10 per cent. wheel, which to a casual observer may have some weight, but will not bear close scrutiny. It has been offered for a less sum than the other, the difference amounting in the three wheels and the fixtures, or gearing, to three thousand one hundred and sixty-six dollars and eighty cents. To prove that this difference is a mere blind to the unwary, let us examine the results of the working of the two wheels for one year, and see where the advantage will be at the end of that time. The pumping capacity of three Turbine wheels of 87.77 per cent. of power, driving six pumps, which it is determined upon to put in the new mill-house, will be for one year of three hundred working days, 5,703,798,600 gallons, the capacity of the same number of wheels and pumps of 82.10 per cent., will be 5,335,329,600 gallons—showing a difference in favor of the Stevenson wheel of 368,469,000 gallons. This difference multiplied by $12.33, the cost (see Chief Engineer's report, page 62,) of pumping a million of gallons into the reservoir, will amount to four thousand five hundred and forty-three dollars and twenty-two cents, a snug little sum each year saved to the citizens, and which in the course of a very few years would pay the whole expense of constructing the works; and still with these facts staring the committee in the face, the citizens of Philadelphia are to have the Geylin wheel imposed upon them. Now under all these circumstances, what can be the reason of this action of the committee? A solution may perhaps be found in the fact that, the gentlemen to whom the contract is awarded, is connected with a member of the committee, whose influence has been exerted to bring about that result.

Now what is to be the effect upon the fair fame of the city should this action of the Committee on Water-Works be consummated. These experiments are not mere child's-play. The report of the Chief Engineer, giving the results, is being looked for with anxiety by the scientific world. No such opportunity has ever before been offered to inquirers into the science of hydraulics to have their different theories tested. It will not only be this country, but every nation of the old world where the science is understood, will have spread before it the report of the Chief Engineer of the Philadelphia Water-Works. How will this city *then* appear in the eyes of the scientific world, should she reject what she has asked for, (the best wheel,) and adopt an inferior article for the contemptible reasons which have been pointed out.

M.

The New Mill House at Fairmount, and the Turbine Water Wheels.

To the Editors of the Sunday Dispatch:—As all matters relating to the water works at Fairmount are of special interest to the citizens of Philadelphia, it may probably be of use to let the people know something of what is transpiring in regard to the turbine wheels that it is expected will soon be placed in the new mill house now in course of construction.

On the 1st of March, 1859, a resolution passed the Watering Committee "authorising and instructing the Chief Engineer to notify, by letter or otherwise, all competitors for building turbine or other wheels to be placed in the new mill house at Fairmount, that they will be required to furnish the said Engineer with an exact working model of their wheel or wheels, according to the size and scale adopted by said Engineer under the direction of the Committee on Water Works; and that the said Engineer is hereby authorized and directed to make the necessary preparation and arrangements for testing the said model wheels, so as to determine the per centage of power produced by each wheel respectively; and he is also required to examine into the mode of construction, with a view of ascertaining which wheel will be the best adapted for propelling the pumps in the simplest and most durable manner; and also to make a full report of his examination."

In accordance with this resolution, the Chief Engineer addressed letters to the various wheel builders of reputation scattered through the United States to the following effect:

"DEAR SIR:—The experiments upon turbine water wheels, directed by the Watering Committee, will be commenced the 1st of August. Models must be constructed to discharge about two hundred cubic feet per minute, and work under a head and fall of from six to twelve feet. A drawing must accompany each model, and a description of the peculiarities of the wheels. These experiments are undertaken to determine the wheel that will be best adapted—all things considered—for our Fairmount works. Two of the wheels approved of will be ordered at once. They will be about one hundred horse power each, and intended to work under a head of from six to twelve feet, varying with the tide. Each wheel will be required to work two double acting pumps—chambers eighteen inches diameter and six feet stroke—and make from ten to sixteen strokes per minute, pumping water into a reservoir one hundred and fifteen feet above the surface of the dam."

This letter having been dispatched, and the arrangements completed for testing the models, (Councils having made an appropriation of five hundred dollars for that purpose,) the gentlemen competing soon began to make their appearance, with their models, on the ground. A great many wheels were tested, (numbering in all, I think, nineteen,) and the results showed great differences, varying from less than 50 up to 87-77 per cent. of useful effect. This last result was obtained from a Jouval wheel, manufactured by Stevenson, of Paterson, New Jersey. The next best model produced a useful effect of 82-10 per cent., and was manufactured by Geylin, of this city, the same gentleman who made the turbine wheel now in the works at Fairmount. Another wheel produced 81-97, another 76-62, and another 75-91 per cent. These were the wheels of celebrated builders, and the tests proved that the wheel builders of this country are equal, if not superior, to any in the world.

The wheels produced by Stevenson and Geylin were, of course, those from which the choice must be made, and the impression that the preference was for the Stevenson wheel appeared to have settled down to a certainty, until after the question began to be agitated in the new committee appointed from the present Councils. Occasionally a murmur would be heard that the Geylin wheel, the manufacturer of which although a Frenchman, lived in Philadelphia, was just as good a wheel as the Stevenson wheel, and that models were very unreliable tests. Gradually these murmurs assumed a shape, and it began to be boldly asserted that the second rate wheel would be adopted. These murmurs culminated upon Tuesday last, when a resolution passed the Watering Committee adopting the Geylin wheel. Whether any influence was exerted by the head of the department to effect this result it is useless to surmise. The wheels were both Jouval Turbines, both equally well adapted to the work to be performed, and the only difference was in the details, and arrrangements of buckets and other minor matters. Neither of the projectors have machine shops of their own, but are compelled to rely upon others to manufacture their wheels, they superintending their construction and erection. A slight difference in cost, amounting in the three wheels to about three thousand dollars in favor of the Geylin wheel, is all that is claimed for it on that score, which amount would be more than saved in one year's work by the Stevenson wheel.

As this communication has now extended to a considerable length, I shall defer continuing it until another occasion.

M.

LEDGER AND TRANSCRIPT.

Philadelphia, Saturday, Feb. 16, 1861.

LOCAL AFFAIRS.

The New Mill House at Fairmount.—The Chief Engineer of water works has prepared the following answers to the questions of the Committee on Water, as to the extraordinary expenses incurred in laying the foundation of the new mill house, occasioned by the influx of water through the dam. The Chief states, "that what the soundings indicated to be solid foundation, upon removing the slight mud covering from it, was found to consist of loose stone, upon a stratum of mud which averaged 23 feet deep. The rock which appeared at low water, at the eastern end of the new mill house, was found to be nothing more than a narrow spar, with mud upon each side 17 feet deep; this also increased the cost of the foundations. The whole foundation is now laid upon about 800 piles averaging twelve inches in diameter, and twenty-three feet long. Upon these are laid timbers twelve inches in thickness, running lengthwise of the building. Around the platform thus constructed three inch sheet piling was driven, and concrete of broken stone and cement was filled in around the head of the piles to the depth of eighteen inches. A second source of increased outlay was the great amount of water which it was found necessary to pump out of the coffer dam, the engines and pumps for which cost $3840. The total cost for extraordinary work in procuring the foundation was $21,289 24. The Chief also states that when the work was first talked of, it was intended to build a mill-house, of similar materials, workmanship, &c., similar to the old one, but when the large annual expense of repairs, &c., was taken into consideration, the work was commenced, and has thus far continued of the most durable material. The three gates are of iron, working upon iron frames; both the surface of the gates and frames are faced with brass. They cost when in their places $2,500, while wooden ones would have cost but $1,200. The mill-house, if finished as thus far completed, will cost $54,000 above the amount first estimated. The total cost of the mill house and machinery will be $123,500. The total cost of raising the Corinthian avenue reservoir was $65,300, and the laying of the main to the First Ward $26,172 10.

Mercury May 27th/1860

THE CHIEF ENGINEER OF THE WATER DEPARTMENT.

The Department for supplying the city with water is of such vast importance, and the responsibilities resting upon its Chief are so weighty and numerous, that even a prudent, sagacious, skilful and energetic engineer may fail occasionally to give satisfaction in the discharge of the duties of that office. If such a man should be selected to fill the position, and should devote his abilities to the faithful administration of the department, we could overlook a few mistakes, in consideration of the general success and good intentions of the officer. But we feel bound to say, that when City Councils elected Mr. Birkinbine Chief Engineer of the Water Department, they most emphatically did *not* put the right man in the right place, and that a weaker, more inefficient, and more generally censurable functionary than Mr. B. has not held any important post under the municipal government since the passage of the Consolidation Act. Inasmuch as this gentleman is working like a beaver for re election, and claims to have a fair prospect of being gratified in his aspirations, we have a right to ask the dominant party in Councils to pause and deliberately consider the policy he has pursued, before deciding to inflict him upon us for another term. It may be expedient, under certain circumstances, to reward the services of a useful politician; but it is always damaging, if not fatal, to a party, to continue a man in office, in defiance of popular opinion, and abounding evidence of corruption or incompetency. During Mr. Birkinbine's administration, very important works have been undertaken to increase the supply of water for the city. The Chief Engineer was called upon to furnish estimates of the cost, and the evidence of his incompetency is to be found in the fact that these estimates are utterly unreliable. After obtaining the sums demanded, he has discovered, during the progress of the work, that a great deal more money should have been asked for. He has blundered into all sorts of extravagance, and trusted to his influence in Councils to secure the appropriations necessary to meet the expenditure. The original estimate for the work upon the mound dam was $90,000. But this amount was expended, and the Chief Engineer then stated that an additional appropriation of $64,000 would be required to complete the job. Still, Mr. Birkinbine shows that he knows nothing about the total cost, for competent engineers estimate that at least three times the amount originally appropriated will be required to finish the work. We are assured by persons who ought to understand the matter, that the turbine wheels cannot be worked unless a main is laid on Corinthian avenue. That will cost about $80,000, and yet Mr. Birkinbine has never even intimated to Councils that such an addition to the work will be necessary. All this goes to prove that the official statements of the Chief Engineer are worthless; that he either does not comprehend the work he has undertaken, or is wilfully misleading our municipal legislators. Such management must cause a heavy and constant drain upon the public treasury, without the city having assurance that the work, when completed, will be worth the money it has cost.

There are a few queries relating to the subordinate officers and employes of this department, which Mr. Birkinbine should be called upon to answer. Does not the chief employ two individuals, at a salary of $500 each per annum, "to watch" the engineers? Does not the son of one of the Water Purveyors receive the same salary without rendering any service whatever to the city? Is not the sum of $180 per annum paid to a boy for the highly important service of "driving the chickens off the hill?" Have not the carpenters, while employed at the expense of the city, been sent to perform some work at the private residence of Mr. Birkinbine? These are legitimate matters for investigation. Perhaps, if a proper committee were appointed, we should have some revelations concerning this department which would quite parallel the alleged abuses in the Navy Yard.

3/60

[For the Public Ledger.]

Extensions of the Water Works.

MESSRS. EDITORS:—In your local column of March 3d, I find some allusions to the extensions of the Water Works. We have understood that Mr. Birkenbine is asking for a loan of $350,000 to operate with, in making certain additional extensions. This large amount just now would be a powerful locomotive in moving the patriotism of the people and supplying their wants. But we learn that the large amount borrowed and appropriated last year to extend the works has fallen short, and that an additional loan is necessary to complete the extensions now in progress; that instead of $17,000 to build a mill house, 90 feet long, on the mound dam, which was appropriated, it will require at least $25,000 more; and instead of $35,000 for the erection of two turbine wheels and four pumps, with mains, stops and connections, to carry the water into the reservoir, there must be an additional amount of $15,000. More money is also wanted to complete the reservoir in the Corinthian avenue. A resolution passed Select Council on Thursday last, to borrow $64,000 more to complete the extensions in progress. Will Councils authorize a loan of $350,000 to commence new extensions before the old ones are completed? If Mr. Birkenbine made such awful blunders in his estimates, prudence would dictate the policy of seeing their present work completed before another step was taken. We should not be surprised if $100,000 were expended before the present job was ended.

MAKE HASTE SLOWLY.

Jouval Turbines.—The City, in procuring the best Turbine Water Wheels for the new mill house at Fairmount, gave an opportunity to a number of inventors to exhibit the power of their respective wheels by a series of experiments, which lasted for several months. These trials resulted in the adoption of the Jouval Turbine, and the wheels are now being constructed at the works of I. P. Morris & Co., in this city, under the superintendence of Mr. E. Geyelin, the Engineer. So massive and large are these wheels, that the firm constructing them have been under the necessity of increasing the capacity of what is known as the largest Boring Mills in the United States. The chambers, which are the parts of the Turbines which lead the water from the inlets of the river to the Turbines proper, will be over 12½ feet in diameter and 8 feet high. The diameter of the revolving wheels, inside the bands, is nine feet; there are fifty shutes in each revolving wheel. The number of horse power, when the tide is in, is 110, and the horse power when the tide is out is 230. The number of cubic feet of water absorbed per minute, when the tide is in is 8800, with 34 revolutions of the wheel per minute. Each Turbine is to propel two double acting pumps, 18 inches in diameter, 6 feet stroke, and to raise the water to a height of 125 feet into the standpipe. The three Turbines are calculated to raise fifty per cent. more water than all the water wheels naw in operation at Fairmount, or about 16,500,000 gallons per day.

230

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falling 6 feet in 23 minutes and 6 seconds, giving a ratio of .8777, making a difference in the ratio of .0567, which is nearly 6¼ per cent. in favor of Stevenson's wheel. If six pumps, driven by three Turbine wheels of Geyelin's construction, (taking the above tests,) would throw into the reservoir in one year, 5,335,329 000 gallons, Stevenson's wheel will produce 6¼ per cent. more, which will amount to 5,682,126,024 gals., being 346,796,424 gals. more than the other. At the cost of $14 66 for pumping of a million of gallons, Stevenson's wheel and pumps would do $5,084 43 more work annually, than the other. Stevenson made an engagement with Hunsworth, Eakins & Co., of this city, machinists of the first class, to manufacture his wheels, under his own supervision and direction, said firm giving a guarantee that it should be done in a workmanlike manner. For these reasons the minority of the committee are firmly convinced that it would be to the interest of the city to give the contract to J. E. Stevenson. They are of the opinion that the city was pledged to this course, and could not in justice do otherwise.

WM. NEAL.

231

But leaving out of consideration Mr. Birkinbine's incompetency, and the suspicion of corruption that attaches to his administration, he is extremely obnoxious to the mass of the community, on account of his silly Sabbatarian bigotry. The man who can deliberately order the playing of the fountains to be stopped on Sunday, would, if he enjoyed the power, clog the river with Sabbatarian ice, throttle the birds for singing, crush the flowers for daring to bloom, and blind our eyes to the rays of the Sabbath-breaking sun. We know that Birkinbine would rejoice if he could only close the gates of Fairmount Park on Sunday. It is his custom to ask on Monday morning—"Well, what sort of *cattle* were here yesterday?" Can we wonder that such an officer is unpopular?

We understand that the present Chief of the Water Department is using all the means at his command to secure a re-election. He is extremely liberal with promises of office and profitable jobs; and it is certain that if he were to attain the consummation of his hopes, he would be unable to keep all these engagements without grafting new abuses upon the department. We trust that the majority of Councils possess sufficient integrity, knowledge of character, and respect for public opinion, to give this individual his passports, and fill his place by the choice of a skilful, experienced and thoroughly upright Chief Engineer, who enjoys the esteem and confidence of the community.

THE FAIRMOUNT WATER WORKS.

To Philadelphia nothing can be more important than the proper management of the Fairmount Water Works. We do not always appreciate their worth, because we are so familiar with their workings; but if we turn to other cities, which have no such advantages, we can better understand how cheaply we obtain our aqueous supplies. They are now threatened, in several ways—First, the causes which, according to Humboldt, will, some centuries hence, leave the bed of the Mississippi dry, are tending to diminish our stock, and, as the population of the city is increasing with unprecedented rapidity, it must be apparent that we need to observe great caution lest we be left in as bad a plight as some of our neighbors. Indeed, the demand for water is now much larger than it would have been from the mere addition to our numbers; for now no house is put up without bathrooms, and the daily bath has become a necessity to almost every one. If, therefore, from the disappearance of the forests in the vicinity of the river, and the improved draining of the soil, the amount furnished shall become less and less, while the demand becomes greater and greater, we can fairly anticipate a time when we shall have to husband our resources more carefully or do without water altogether. Of course, we must first try the former of these alternatives; and the Councils recently made an appropriation of five hundred dollars to defray the expense of a series of experiments with Turbine wheels. Mr. Birkenbine sent in his report yesterday, and although he may not be to blame, his report is unsatisfactory. He says, at the outset, that the department entered reluctantly upon the experiments:

> "First, for want of time to conduct the investigations with the care and detail which their importance demands. Second, on account of the limited appropriation made to carry them out. Third, the delay consequent upon the experiments in completing the plans and details of the works, and also the difficulty felt in making deductions from model experiments which would guide us in the selection of wheels of the great power required for these works."

The second objection is a valid one, and the authorities should provide the necessary funds for carrying out an exhaustive series of experiments; but we submit that it is no answer for an engineer to make, that the Department has not the time to do its work properly. We do not pretend to know anything of water wheels, but scientific men have assured the public that changes should be made at Fairmount. To decide the matter, it is submitted to experiment. Will any one be satisfied, when those who applied the test tell us "it was necessary to refuse to test a number of the wheels, as the appropriation was all exhausted, and the completion of the plans for the wheels could be no longer delayed, and the Department was so fully occupied with the extension of the works, that time could not be found to pay them the proper attention?"

It is a very musty, but a very sensible proverb, which says, "the more haste the less speed," and Mr. Crockett was not the less respected because he made it a rule to look before leaping. We beg the attention of the authorities to these simple truths. Let us have a committee of scientific men appointed, and let us know which is the best wheel, before we go further. Among the members of the Franklin Institute could be found a dozen of gentlemen capable, honest and willing—who would not be open to the suspicion of favoring any of those who might come before them; and, if dollars be the bugbear, the parties offering models would, doubtless, contribute their respective shares of the expense.

The decision of the Water Department may be right. It may also be wrong. Will not the Councils do all in their power to guard us against mistake?

Having done that, we shall then have hope of their buying the land on the west side of the Schuylkill. If not, the supply of water will give out, and its purity become one of the things of the past.

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passed. Adjourned.

Report of the Chief Engineer of the Water Works.

To the Select Council of the City of Philadelphia.

GENTLEMEN:—In answer to your Resolution of May 31st, 1860, the Department would submit the following general Report upon the experiments made with Turbine Wheels at Fairmount Works;—

The experiments were made in obedience to a Resolution of the Committee on Water, and by an appropriation of five hundred dollars made by Councils. See Resolution appended marked "A." An advertisement was inserted in the *Scientific American*, calling attention to these experiments. See copy appended marked "B." See also appended a copy of a letter addressed to the wheel makers, in answer to inquiries, marked "C." If a detailed Report is thought desirable by your honorable body, an appropriation of three hundred and fifty dollars will be necessary to print it in pamphlet form, with the necessary diagrams and tables, to make it fully intelligible and useful.

An experimental apparatus was constructed at Fairmount Works for the purpose of testing such turbine water wheels as might be presented. The Department entered reluctantly into these experiments. First, for want of time to conduct the investigations with the care and detail which their importance demands. Second, on account of the limited appropriation made to carry them out. Third, the delay consequent upon the experiments in completing the plans and details of the works, and also the difficulty felt in making deductions from model experiments which would guide us in the selection of wheels of the great power required for these works. So far, however, as these experiments have been prosecuted, they have been carefully done. The tests were made simply for the purpose of ascertaining what proportion of the power employed would be utilized by the different wheels or their co-efficient of useful effect. The wheels were tested under a head and fall of six feet, and weights of from five hundred to sixteen hundred pounds were raised from fourteen to twenty-five feet.

Nineteen different wheels were tested and one hundred and twenty-two experiments made with them. Several of the wheels were removed without submitting them to a public test, of these no accounts have been kept. The accompanying table marked "D" exhibits the best results obtained from some of the wheels. Mathematical accuracy was not aimed at, but the experiments may be relied upon as practically correct. The apparatus was of the most simple character, and the arrangements such that no mathamatical formula was required to ascertain the amount of water used or result produced, but they were actually weighed and measured.

It was necessary to refuse to test a number of the wheels as the appropriation was all exhausted, and the completion of the plans for the wheels could be no longer delayed, and the Department was so fully occupied with the extension of the works, that time could not be found to pay them the proper attention.

Valuable assistance was rendered in these experiments by the Chairman of the Water Committee, O. H. P. PARKER, Esq., JAMES MILLHOLLAND, of Reading; WM. B. BEMENT and CHARLES S. CLOSE of this city. Among the wheels which produced the best results, and to the makers of which certificates have been given, as shown in the accompanying paper marked D, the highest co-efficients of useful results were produced by the JONVAL wheels made by J. E. STEVENSON, of Paterson, New Jersey, and E. GEYLIN, of this city, and a modification of the PARKER wheel, made and patented by ANDREWS & KALLBACH, of Burnville, in this State. The majority of the wheels worked very satisfactory, and the makers of them were mechanics of more than ordinary ability. It is believed that no country could produce from the same number of wheels promiscuously collected as satisfactory series of experiments.

The best result was procured from the JONVAL wheel, made by J. E. STEVENSON, of Paterson, New Jersey, which gave an actual useful effect of the power employed of nearly ninety-one per cent, The wheel of ANDERSON & KALLBACH, of Pennsylvania, is remarkable for its simplicity, and had it been constructed with the same amount of care and finish as that of some of the others, it is believed that the co-efficient of useful effect would not have been surpassed by any. Two of these wheels placed upon a horizontal shaft might make a most desirable arrangement for our new works, but the Department is not prepared to recommend their adoption, as it might involve a risk of a failure, and we are averse to making any experiment at so great an expense and loss of time which might result to the city. We have been unable to find any wheels now in operation of the aggregate power that we will require, or arranged in the above manner, or under similar circumstances to our requirements.

The Department, therefore, see no reason to change the plans of the Works, and will adopt the Jonval Turbine, arranged and geared similar to the one now in use at Fairmount.

In coming to the above decision, and recommending the Jonval Wheel, the Department has been influenced by the following considerations:—

First—They have always been esteemed among the most efficient wheels, and although other forms of wheels have been removed to give place to Jonval Turbines, the Department does not know an instance where the Turbine wheel has been taken out to introduce another form of wheel. Our experiments upon the Turbines have also proved them the most effective, giving the highest co-efficient of useful effect. See table appended marked D.

Second—They are the best adapted to our particular situation on account of the comparatively small fall at Fairmount, and the large amount of power required for each wheel (a mean of one hundred and twenty-five horse power) and the low velocity they run as compared with other Turbines, making less reduction of the speed necessary by means of gearing.

Third—Their durability, and the facility with which repairs and renewals can be made.

Fourth—They can be constructed and connected to the pumps at as small cost as any other form of Turbine wheel. No objection can be urged against the the Jonval wheel, arranged as proposed, except that involving mere mechanical arrangement, viz: the step and bevel gearing necessary. Practically, these are not objections; the step of the present wheel at Fairmount works has required but one renewal since it has been erected, which is the only repairs found necessary to the wheel; and as regards the bevel gearing, or reducing the velocity for the proper speed of the pumps by two or four wheels, there is only an apparent additional loss by friction, but none in reality, as a little reflection will demonstrate.

Fifth—The favorable experience the city has had with the wheel of this kind at Fairmount, built by EMILE GEYLIN, which has been in constant use since December, 1851.

The reasons for rejecting the plan of two wheels upon a horizontal shaft, as recommended by the former chairman of the Committee on Water, are as follows:—

First—Our minimum head and fall is but eight feet. To produce one hundred and twenty-five horse power by two wheels would require each of them to be fifty inches in diameter, and they would occupy so large a proportion of the head and fall that the co-efficient of useful result would of necessity be low.

Second—The experiments made by the Department at Fairmonnt proved that two wheels arranged upon a horizontal shaft will not give as good a result as one on a vertical shaft. Two Parker wheels arranged upon this plan gave but a co-efficient of sixty-seven per cent., while a Parker wheel by the same maker on a vertical shaft gave a co-efficient of seventy-five per cent. Two Jonval wheels upon a horizontal shaft gave but a co-efficient of sixty-eight per cent., when one Jonval wheel by the same maker, on a vertical shaft, produced a co-efficient of eighty-two per cent.

Third—The velocity of the wheels would be so great, (from seventy to ninety-six revolutions per minute with the two wheels, while the one Jonval wheel upon a vertical shaft will make but from thirty-one to forty-two revolutions per minute,) and the reduction of the speed by means of gearing to the speed of the pumps would therefore involve much greater loss by friction than could in possibility be the result of the plan adopted for the gearing of the Jonval wheel as proposed.

In obedience to a resolution of the Committee on Water, the Department addressed letters to J. E. STEVENSON, of Paterson, N. J., E. GEYELIN, of Philadelphia, ANDREWS & KALLBACK, of Bernville, Pa., and LEVI SMITH, of Reading, Pa. (See copy appended marked E.) In answer to these, the following propositions were received and opened by the Committee on Water, April 24th:—

From EMILE GEYELIN, of Philadelphia, for three
Turbine Wheels.................... $6,900·00
Gearing for the same.................... 16,500·00
Total....................$23,400·00

From J. E. STEVENSON, of Paterson, N. J., for
three Turbine Wheels....................$15,000·00
Gearing for the same.................... 14,500·00
Total....................$29,500·00

From LEVI SMITH, of Reading, Pa., for each Turbine Wheel.................... $4,130·00
Gearing for each wheel.................... 4,360·00
$8,490·00
Total....................$25,470·00

And at a subsequent meeting of the Committee, May 22d, a proposition was received from HUNSWORTH, EAKIN & Co., of this city, for three Turbine Wheels and gearing, $26,566·80.

Care has been taken by the Department not to commit the city either in the advertisement (see appendix marked "B") or in letters addressed to makers of wheels, in such a manner as to give the maker of any wheel, which might be presented for test, a claim upon the city. This was done that the Department might not be embarrassed in considering simply the interest of the city in selecting and constructing the wheels. In regard to the form of wheel recommended, none of the JONVALS tested claimed any patent or peculiarity of construction, but simply differed in proportion and mechanical finish.

At the recommendation of the Committee on Water, the Department has made arrangements with EMILE GEYELIN, of this city, to construct two JONVAL Turbines for the Works.

Respectfully yours,
HENRY B. BIRKINBINE, Chief Engineer.

217

The Water Works.—The lining of the new portions of the reservoir, at Corinthian avenue, will be completed in a few weeks. The water is kept some two feet below the new work, and a platform is floated in the reservoir for the use of the workmen laying the brick.

The foundations for the new wheel house at Fairmount are progressing quite rapidly, the steam pumps in operation keeping the coffer dam free from water. One wheel pit is now finished nearly to high water mark, and the foundation of the other two are being laid.

During the present year nearly 90,000 feet of water pipe have been laid by the Department, nearly all of which has been put down in streets, improved within the past eighteen months. The erection of new houses in the outer portions of the city keeps the Water Department busy in attending to the applications for water pipes, as the pipe has to be laid before the streets are paved.

227

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224 April 20/60

Total for the year, - - - - $5,319,579

The Water Department.—The number of men employed by the Water Department during 1859, worked in the aggregate the following number of days: Laborers, 65,000 days; carpenters, 2,000 do.; masons, stone-cutters and bricklayers, 11,000; horses and carts, 5,500; painters, 500; machinists, 8,000. During the year 22½ miles of water pipe were laid, exclusive of the main in Broad street, which makes the number of miles laid, since consolidation, 65. From this it will be seen how rapidly the city has grown in the portions that were looked upon as entirely rural at the time of consolidation.

The Water Works.—Work has been resumed at the mound dam at Fairmount, and the heavy iron gates on the north side of the dam, which are to admit water into the new Turbine wheels to be put upon the south side, have been put in their place.

226

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to participate in it.

S. Transcript

THE WATER JOB A FAILURE.—The proposition to make a loan of $350,000 to begin a magnificent municipal job, failed in the Finance Committee on Monday evening. The discussion on the ordinance was quite exciting, but, at last, the advocates of the measure cooled down and accepted the suggestions which were read from the SUNDAY TRANSCRIPT of last week. A report adverse to the proposition of the Water Committee was agreed upon, and, last Thursday, it was read in Councils.

This for a time will end the matter. With the expenditure of $64,000 recommended by the Finance Committee, the Schuylkill works will be found to be ample to supply the City with a sufficiency of water for ten years to come. Mr. NEAL and his colleagues who were instrumental in heading off this vast expenditure deserve great credit for their independent course.

S. Transcript 18 March

THE WATER WORKS.—The propriety of raising a loan for the extension of the water works is now engaging the attention of Councils. The subject deserves careful consideration. The picturesque character of Fairmount is rapidly being destroyed by "improvements," and scientific men find much fault with the whole management of the works, and the proposed additions. Either reason is potent enough to demand a thorough investigation of the whole matter, before authorizing measures which would ruin Fairmount, and plunge the city needlessly into debt.

The new air-ship, which has been christened the *City of New York*, is so nearly completed that but few essentials of detail are wanting to enable the projectors to bring it visibly before the public.

The aeronaut in charge is T. S. C. Lowe, a New Hampshire man, who has made 36 balloon ascensions. His last public appearance was at Portland, during this year's celebration of the Fourth of July. Since that time he has given his undivided attention to the perfection of the air-ship designed for his trans-atlantic voyage, and has devised various improvements in its construction, by which he claims to have overcome the more serious impediments to aerial navigation.

The dimensions of the *City of New York* so far exceed those of any balloon previously constructed that the bare fact of its existence is notable. The spot where its huge envelop is now undergoing the final process of oiling is an open piece of grass-land, four or five miles distant from the city. The profane have not yet been admitted to the knowledge of the mystery which surrounds the mighty heap of cloth and cord, and the jealous eye of a faithful watchman has kept at bay the inquisitive stranger. As remarkable events are prepared most carefully in the dark, so Mr. Lowe has reserved the surprise of this biggest of balloons until the last moment, when the immensity of its measurements can be palpably distinguished. Briefly, for so large a subject, the following are the dimensions:—

Greatest diameter, feet..................	130
Transverse diameter..................	104
Hight, from valve to boat..................	350
Weight, with outfit, tuns..................	3½
Lifting power (aggregate), tuns........	22½
Capacity of gas-envelop, cubic feet....	725,000

The *City of New York*, therefore, is nearly five times larger than the largest balloon ever before built. Its form is that of the usual perpendicular gas-receiver, with basket and life-boat attached. The introduction of valuable improvements, however, leads to the conviction that its general arrangement is greatly superior. Mechanical power is to be applied; the aeronautic party will keep the cold away from their marrow by the use of a lime stove; a new arrangement of revolving fans has been devised; and the material of which the envelop is composed is covered with a peculiar varnish, the invention of Mr. Lowe.

Six thousand yards of twilled cloth have been used in the construction of the envelope. Reduced to feet, the actual measurement of this material is 54,000 feet, or nearly 11 miles. Seventeen of Wheeler & Wilson's sewing-machines have been employed to connect the pieces, and the upper extremity of the envelop, intended to receive the gas-valve, is of triple thickness, strengthened with heavy brown linen, and sewed in triple seams. The pressure being greatest at this point, extraordinary power of resistance is requisite. It is asserted that 100 women, sewing constantly for two years, could not have accomplished this work, which measures by miles. The material is stout, and the stitching stouter.

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tial prosperity.

Argus Feb 14/60

FAIRMOUNT WATER WORKS.—We are indebted to Mr. Birkenbine for a copy of the History of the Works and Annual Report of the Water Department of the city of Philadelphia.

We have only to say that this is the most interesting report that we have received from any department this year. The history of the Water Works abounds in reminiscences of the most interesting character, and the most singular matter connected with the whole history, is, that the far-seeing philosopher, Benjamin Franklin, as early as the year 1793 or '94, presented a system of supplying the city with water, which, if adopted at that time, would have saved millions of dollars; given the city an abundant amount of a purer and better element, "at a superior head to that from which it is now derived, without the assistance of any pumping machinery," adequate for all demand; but the "old fogyism" of that day, just as at the present, intefered and prevented the adoption of a plan which, at comparatively little cost, would have been of incalculable benefit to Philadelphia.

The whole report is well written, clear and perspicuous, and reflects credit on the author, as an able and valuable document.

As regards the general management, expenses, &c., of the works, we will take another occasion to examine them and give our views.

THE WATER WHEEL EXPERIMENTS AT PHILADELPHIA.

MESSRS. EDITORS:—On page 168 of the present volume of the SCIENTIFIC AMERICAN, in your comment on turbine water wheels, you say: "And if we are correctly informed in regard to the results of experiments at the Philadelphia Water-works, there would seem to be yet wide room for improvement in this department; the best turbines yielding only some 60 per cent of power expended, instead of 80 to 90, as has been heretofore claimed." Your information on this subject is not well founded. The results of our experiments vary from 54 to 87 77-100 per cent, the last being the highest result yet obtained. The center vent wheels all being the lowest in per-centage, they varying from 54 to 61 per cent. The Parker wheel (75 63-100) and the Jonval turbine being the highest, three of them—made by different makers—have produced 76, 82 and 87 77-100 per cent respectively. The Tyler wheel produced 71 per cent, and the Blake wheel nearly 72 per cent. Our experiments have been conducted on the most accurate principles possible, and have been very interesting to the chief engineer and the committee. And I am pleased to say that the wheel-men who have participated in the tests are unanimous in their praise of the tests, and the impartial manner which they are conducted (with but one exception, only, I believe), and if we were disposed to continue the experiments, our apparatus would be occupied for a year longer; but we will be compelled to close the experiments as soon as a few more wheels are tested that are now here waiting. As soon as the tests are closed, the chief engineer will furnish you with the results in tabular form, with a description of each wheel, &c., which will be more full and complete than has ever been published in this or any other country.

O. H. P. PARKER,
Chairman of Committee

Philadelphia, Pa., March 17, 1860.

Interesting Statistics of the Water Department.—Mr. Birkinbine, Chief Engineer of the Water Department, has been engaged for some time with his assistants in compiling a complete history of the water works of Philadelphia, and collecting a mass of interesting statistics, which are to be submitted to Councils. We condense the following from the report:

Wards.	Steam Engines supplied with water.	Agg'e Horse Power.	Amount Assessed for Man. purposes.	Av'ge rent per each taxable.	Average per each tenant
1st,	10	112	$1,432	$5 12	$6 65
2d,	12	175	1,169	4 59	5 58
3d,	6	27	335	4 04	5 75
4th,	4	27	347	4 55	3 67
5th,	29	295	1,646	7 20	10 61
6th,	39	656	5,105	8 98	4 60
7th,	12	284	1,281	5 87	9 40
8th,	10	106	1,051	8 52	13 88
9th,	23	345	2,382	6 65	10 23
10th,	20	242	1,117	6 10	9 86
11th,	26	225	2,663	5 13	7 91
12th,	14	212	1,821	5 04	10 71
13th,	13	108	1,315	6 12	8 47
14th,	24	248	1,047	6 54	7 46
15th,	41	615	4,456	5 95	7 23
16th,	43	697	2,915	5 08	7 64
17th,	18	404	1,062	4 00	6 30
18th,	29	408	2,262	4 20	7 08
19th,	28	437	3,064	4 52	7 64
20th,	22	180	1,632	5 16	6 63
24th,	21	360	1,793	1 78	11 87
	438	6,763	$40,693	$1 85	$7 86

No water is supplied in the Twenty-first Ward, where there is a large number of engines, and the Twenty second is supplied by two private companies, and in the Twenty-third the water has but recently been introduced.

The above table does not give the number and power of steam engines in the city, from the fact that many of the largest manufactories are so situated as to procure their supply of water direct from the rivers, creeks and wells. The 438 steam engines supplied by the water department, consume about 150,000 tons of coal per annum. An army of nearly 50,000 able-bodied men would be needed to perform this labor, and the extra expense of muscle over coal would not be less than ten millions of dollars per annum.

The average water tax is but 35 cents to the $100 of taxable property, in the twenty-one wards supplied, more than one half of which is returned to the city in the profits of the works. In 1797, the water tax of the city was equal to about 90 cents on $100. The number of water tenants assessed for 1860, is 64 129 and the amount of water-rent assessed is $504,067.

During the year 1859 there was laid by the department 116 944 feet of pipe, being a total of over twenty-two miles, which, added to that previously laid, makes a total of 306½ miles of water main now in the city.

139

Mercury June 24/60

FOR THE DIGESTION OF COUNCILMEN.

THE WATER AND HIGHWAY DEPARTMENTS OF THE CITY.

The caucus of the "People's party" members of Councils will be held in the course of the present week, to nominate candidates for important positions in the various municipal departments. The individuals thus fixed upon are almost certain to be finally selected by the majority of our local legislature, and the action of this caucus, therefore, assumes grave interest for the community. We have already given a number of reasons why H. P. M. Birkenbine should not be re-elected Chief Engineer of the Water Department. We have shown that he has rendered himself obnoxious to the mass of the people by his ridiculous war upon the fountains in Fairmount Park, his propensity for demanding extra appropriations, and his presentation of estimates for work to be done, upon which no reliance can be placed. The most cursory review of the manner in which Birkenbine has managed the affairs of the Water Department, will satisfy any reasonable person that he is disqualified for the position. But there is one item to which we have not referred, and that deserves to be ventilated for the consideration of Councilmen. We allude to the base attempt to injure an upright and respectable mechanic, made by this immaculate functionary. Mr. Birkenbine, without any apparent reason, discharged from the employ of the city, Mr. Barry, an industrious and competent engineer. A committee of Councils was instructed to demand an explanation of this action, inasmuch as considerable clamor was raised by the friends of Barry. Birkenbine was in no hurry to meet the committee. After a delay of several weeks, he did come forward, however, and charge Barry with dishonesty, in having appropriated a few bushels of coal, belonging to the city, to his own use. The accused met this charge, by expressing an anxiety to put the Chief Engineer on the witness stand, and compel him to say whether he (B.) did not give the subordinate engineer permission to use the coal for an immediate necessity, and whether, as agreed upon, the same quantity of coal was not restored to the public bins. Birkenbine would not consent to this examination, and thus contrived to put an imputation upon the character of a purer man than himself. We trust this count in the indictment will be taken into consideration. A man who would be guilty of such meanness—to use the mildest term for the offence—cannot surely be sustained by high-minded, honorable gentlemen. The whole community will rejoice if Frederick Graef shall be substituted for the narrow-minded, incompetent and utterly unreliable Birkenbine, as Chief of the Water Department.

The Highway Department is so thoroughly corrupt that an entire reorganization is imperatively demanded. It will make but little difference, as regards the expenditures, whether Shantz or Andress is chosen by the caucus. Jas. Davenport has the honesty to attempt reforms, but we doubt if he could effect much good under the present system. The department belongs to the jobbers or contractors, who do pretty much as they please, always keeping an eye to the spoils, and always neglecting the work they contract to perform. There ought to be a reduction in the number of the Supervisors, who appear to have no more important business than attending political conventions and "tree-frogging" on the Boulevard. We are quite certain that Mr. Shantz should not be re-elected. Under his reign the contractors—some of whom enjoy a bad notoriety—have had full swing, greatly to the suffering of the municipal treasury. Let us put a few questions to the committee who supervise the pay-rolls of the Department:

1. How many of the small streets that have been ordered to be repaved and tramwayed, have previously been laid with gas-pipe, and the expense charged to both the Highway and Gas Departments?

2. Has not a very near relative of one of the Commissioners a large interest in the majority of the contracts for the above work?

3. What number of loads of coal-ashes were used in the performance of that work?

4. Who obtained the contract for filling up Dickerson street, from Church street to the wharf, when the work had been nearly finished the previous year, and what price was paid for this second hitch at the job?

5. Who attends to receiving the gravel and measuring the loads in the Second Ward? Have the Commissioners ever satisfied themselves whether this gravel is not being delivered by the same carts that are employed at the rate of $2 50 per diem?

6. What was done with the cobble-stones removed from Washington avenue? When the railroad track was laid on that thoroughfare, between Fifth and Sixth streets, the previous year, forty loads of cobble-stones were conveyed to the yard [illegible] Carpenter street, and used for public purposes, under the direction of Mr. James Davenport, who was Supervisor at that time.

7. What number of carts and horses has been charged to the item of cleaning the streets, while the said carts and horses were employed by the contractors in grading on Market street?

These may be considered small matters. But an investigation will prove that under the present management of the Highway Department, such "small matters" have made up a large amount of plunder. The official who has permitted such abuses, should not be allowed to continue in authority. And before any other man is suffered to commence operations in that department, the accounts should be thoroughly overhauled and a plan adopted to secure a more economical and satisfactory administration.

A Large Iron Casting.—Messrs. I. P. Morris, Towne & Co., of the Port Richmond Iron Works, made yesterday, at their Foundry in Kensington, the heaviest casting ever run in this State. The casting was for an anvil block for a seven ton steam hammer in course of construction by these gentlemen for the Lackawanna Iron and Coal Company at Scranton. The casting weighs 32 tons, which, together with the other work cast the same day, made the aggregate weight of iron in the heat about ninety thousand pounds. This immense mass was melted in one of McKinzie's patent cupolas in four hours and five minutes.

The mould for the anvil block was put together under the immediate supervision of Mr. James T. Bradshaw, the foreman of the foundry. The fluid metal, about thirty-three tons, was contained in a large reservoir, holding about eighteen tons, and two kettles and two ladles swinging on cranes, holding respectively nine and six tons. The time occupied in running this large casting was four minutes from the time the reservoir was tapped until the mould was full.

This instance is merely an exemplification of the fact that anything in iron, that can be made anywhere else, can be made in Philadelphia, New York boasters to the contrary notwithstanding. 7/1/62

The annexed table exhibits the mortality in each ward, with the population according to the late census, with the ratio of deaths to population, and the per centage of deaths in each ward:

314

WARDS.	Population last Census.	Deaths.	Deaths to Pop'n.	Per Centage of Deaths to Total Mortality.
1st,	30,886	875	1 in 35	6.05
2d,	29,123	758	1 in 38	5.24
3d,	19 929	400	1 in 49	2.77
4th,	23,461	681	1 in 34	4.70
5th,	24,792	488	1 in 50	3.38
6th,	14 832	286	1 in 52	1 98
7th,	31,267	733	1 in 42	5 07
8th,	27,770	427	1 in 65	2 96
9th,	17,196	356	1 in 48	2.47
10th,	21,849	422	1 in 51	2 92
11th,	16,681	452	1 in 36	3 13
12th,	16 681	362	1 in 46	2 51
13th,	20,045	397	1 in 50	2 74
14th,	24,258	426	1 in 56	2 94
15th,	32,097	768	1 in 41	5 31
16th,	20,067	529	1 in 37	3 66
17th,	23.264	828	1 in 28	5.72
18th,	20 441	596	1 in 34	4 12
19th,	38,828	1085	1 in 36	7.50
20th,	29 963	809	1 in 37	5 59
21st,	17 159	334	1 in 51	2 29
22d,	17,173	248	1 in 69	1.71
23d,	23 985	434	1 in 55	3 06
24th,	23,738	489	1 in 48	3 38
	565 528			

There were unknown, 446; Almshouse, 543; from the country, 298—making a total of 14,468. Rates of deaths to population, 1 in 39.

Prices of Advertising in the Ledger.

Two Lines,				Four Lines,			
Two Lines,		1 day,	$0 25	Four Lines,		1 day,	$0 [illegible]
"	"	2 days,	0 38	"	"	2 days,	0 75
"	"	3 days,	0 50	"	"	3 days,	1 00
"	"	4 days,	0 63	"	"	4 days,	1 25
"	"	5 days,	0 75	"	"	5 days,	1 50
"	"	6 days,	0 88	"	"	6 days,	1 75
"	"	12 days,	1 38	"	"	12 days,	2 75
"	"	1 month,	2 75	"	"	1 month,	5 [illegible]

Longer advertisements in exact proportion, and all are payable at the time ordered.

Advertisements must be received by 7 o'clk, P.M.

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falling 6 feet in 23 minutes and 6 seconds, giving a ratio of .8777, making a difference in the ratio of .0567, which is nearly 6¼ per cent. in favor of Stevenson's wheel. If six pumps, driven by three Turbine wheels of Geyelin's construction, (taking the above tests,) would throw into the reservoir in one year, 5,335,329 000 gallons, Stevenson's wheel will produce 6¼ per cent. more, which will amount to 5,682,126,124 gals., being 346,796,424 gals. more than the other. At the cost of $14 66 for pumping of a million of gallons, Stevenson's wheel and pumps would do $5,084 43 more work annually, than the other. Stevenson made an engagement with Hunsworth, Eakins & Co., of this city, machinists of the first class, to manufacture his wheels, under his own supervision and direction, said firm giving a guarantee that it should be done in a workmanlike manner. For these reasons the minority of the committee are firmly convinced that it would be to the interest of the city to give the contract to J. E. Stevenson. They are of the opinion that the city was pledged to this course, and could not in justice do otherwise.

Wm. Neal.

TESTING OF WROUG[illegible]ON GIRDERS.

The following is a reliable account of the testing of the iron girders of the Peabody Institute, Baltimore, Md. The girders were designed by Benjamin Severson, and made by Hayward, Bartlett & Co., of Baltimore.

The length of these girders is 69 feet; clear span, 66 feet, vertical hight or depth, 45 inches; weight of one girder, 19,738 lbs. Four of these are used to sustain a floor 66 by 100 feet. These girders being of extraordinary length—their span being probably the greatest ever made within the same depth of flooring—it was deemed prudent to subject their strength to a thorough test, to be conducted under the direction of J. C. Neilson, architect and engineer in charge of the investigation.

After the four girders were placed in position, with flooring attached to the extent of about 16,000 lbs. to each girder, besides their own weight, one of them was loaded with bricks, as follows:—The girder being of arch form, the end parts were brought up to a level with the middle or highest part, by means of 3,000 bricks. On this foundation was then built a dry brick wall, 11 bricks wide and 97 bricks in length, measuring in width 3 feet $10\frac{1}{2}$ inches, and 66 feet in length. This wall was carried up uniformly to the hight of 17 courses of bricks. It was found that this load caused a depression of $1\frac{5}{8}$ inches at the middle of the girder. This load was left upon it two weeks, when another level was taken, and it was found that the deflection had not increased.

The load was then increased by the addition of eight more full courses, and 325 bricks scattered loosely over the top of the wall. This caused a further deflection of $\frac{7}{8}$ of an inch, making the total deflection precisely $2\frac{1}{2}$ inches The load was now 30,000 bricks, equal to about 1,326 cubic feet. The bricks weighed from $4\frac{1}{2}$ lbs. to 5 lbs. 6 ounces each; but, averaging them at 5 lbs., the applied load was 150,000 lbs. (the 16,000 lbs. of flooring due to a girder, and its own weight, not being included). This weight was left upon the girder several days, but the deflection did not increase. The load was then gradually removed as fast as the bricks were required for use. Then another level was taken, and it was found that the girder had resumed its original form—there was no "set" in the deflection.

The deflection under all these tests was at the rate of $\frac{1}{8}$ of an inch to every 7,500 lbs. of load. The variable load of this floor may produce a deflection of about $\frac{1}{2}$ an inch—not over $\frac{5}{8}$ of an inch. This, in a width of 66 feet span, will hardly be perceived. Considering the great length of these girders, especially in proportion to their depth, it being more than 18 to 1, and that deflection is always proportioned to length and depth, it will be conceded, it is believed, that these girders are more rigid than any others that have been reported. And a careful comparison of the weight of these girders and the results of these tests, with the weights and capacities of other girders of various lengths and depths, will show (taking deflection for a guide) that those in the Peabody Institute are also greatly superior in strength.

EXTENSIVE EXPERIMENTS TO TEST THE STRENGTH OF IRON AND STEEL

Messrs. Napier & Sons, the great ship-builders of Glasgow, have recently made the most extensive series of experiments ever attempted for ascertaining the tensile strength of steel and iron. As these were made simply for their own guidance in purchasing material, they have the most absolute warrant for perfect fairness, and this circumstance, combined with the care and thoroughness with which they were conducted, renders the results entirely reliable. The London *Artizan*, for January, contains a detailed account of these experiments in five elaborate tables, covering twelve pages of that journal, and embracing a mass of minute and accurate information in regard to the strength of different varieties of steel and iron in bars and plates, which is a valuable contribution to the knowledge of the world. From this great mass of information we select such portions as we suppose will interest our readers. The mode of testing was simply to fasten the lower end of the bar securely. attach the upper end to the hook of an enormous steel-yard, and load the end of the steel-yard until the bar broke. Various sized bars and plates were tried. which, however, were carefully measured and from the weight required to break them, the strength of a bar or plate of similar material, an inch square, was obtained by calculation. The *Artizan* publishes these details in all the 625 experiments, but for plainness we shall give only the more important results in the leading varieties tried:—

Variety tested.	Breaking weight in lbs. per square inch of original area.
STEEL BARS.	
T. Turton & Sons, cast steel for tools	145,383 to 112,242
Thomas Jewitt, cast steel for tools	148,294 to 117,719
Thomas Jewitt, cast steel for taps	110,697 to 84,036
Thomas Jewitt. double shear steel	125,321 to 106,747
Thomas Jewitt, spring steel	82,719 to 65,158
Shortridge, Howell & Co., homogeneous metal	99,570 to 82,218
Mersey Co., puddled steel	75,304 to 67,065
Blochairn, puddled steel	75,114 to 45,931
STEEL PLATES.	
T. Turton & Sons, lengthwise the plate	95,360 to 92,858
T. Turton & Sons, across the plate	99,952 to 92,788
Shortridge, Howell & Co., homogeneous metal, lengthwise the plate	108,900 to 85,650
Shortridge, Howell & Co., homogeneous metal, across the plate	105,732 to 84,211
Mersey Co., puddled steel, lengthwise the plate	108,906 to 92,676
Mersey Co., puddled steel, across the plate	99,468 to 63,098
Blochairn, puddled steel, lengthwise the plate	106,394 to 93,327
Blochairn, puddled steel, across the plate	89,447 to 81,047
Blochairn, boiler plates, lengthwise the plate	97,413 to 95,227
Blochairn, boiler plates, across the plate	75,606 to 71,792
IRON BARS.	
Lowmoor	67,876 to 64,871
Prince Demidoff, tilted bars	55,190 to 44,600
IRON PLATES.	
Lowmoor, lengthwise the plate	57,881 to 47,426
Lowmoor, across the plate	55,368 to 47,426
Farnley, lengthwise the plate	62,544 to 56,172
Farnley, across the plate	56,546 to 52,955
Mossend, best, lengthwise the plate	43,992 to 43,012
Mossend, best, across the plate	43,875 to 38,007

Thus it seems that 74 tuns may be suspended by a rod of the very best cast steel, an inch square, while a rod of the same size of the poorest quality of steel will support only about 23 tuns. Steel in bars is considerably stronger than in plates, and it is almost as tenacious across the plate as lengthwise.

THE HOME GUARD BILL.

The following is a correct copy of the bill for organizing the Home Guard of Philadelphia, as passed by the Legislature and approved by the Governor. The bill published in this morning's *Inquirer* was incorrect:

AN ACT Relating to the Home Guard of the City of Philadelphia.

SECTION 1. Be it enacted, &c.—That the Councils of Philadelphia for the defence of said city and the protection of life and property therein are hereby empowered to create and organize a Home Guard which shall consist of such companies and regiments of volunteer soldiers as are now or may be organized for the defence of the said city—Provided the same shall not exceed 10,000 men.

SEC. 2. That the Mayor of Philadelphia, by and with the advice of the Select Council, shall appoint an officer, with the rank of Brigadier General in the Volunteer Militia of this Commonwealth, who shall be commissioned as such by the Governor, and shall command the Home Guard organized in pursuance to the provisions of this act, and who shall hold and execute the duties of said office until his successor elected, as hereinafter determined, shall be qualified to perform the duties thereof.

SEC. 3. That on the second Monday of September one thousand eight hundred and sixty-one, an election shall be held by the Home Guard, according to the mode established for elections for the office of Brigadier General, by the general militia laws of this Commonwealth, and the person so elected, when confirmed by the Select Council, and commissioned by the Governor, shall enter upon the duties of the office of commander of the Home Guard, on or after the second Monday of October, one thousand eight hundred and sixty-one, and shall hold and execute the duties of said office for the term of five years, from the said second Monday of October, 1861, if the said Home Guard shall so long continue to exist. If the said Home Guard shall exist for a longer term than five years, elections for the commander of said Home Guard, shall be held every five years after the first election shall be held, or oftener if vacancies shall occur.

SEC. 4. That the Home Guard hereby established shall be a part of the militia of this Commonwealth, and shall be composed of white male residents of the city of Philadelphia, above the age of eighteen years, who shall enroll themselves for the performance of military duty in the defence of the said city, and the officers thereof shall be elected or appointed as provided for by officers of like grade in the general militia laws of this Commonwealth, and shall be commissioned by the Governor; and the commander, officers and members thereof, shall be liable to be tried for misconduct by court martial as is provided for by the militia laws of this State.

SEC. 5. That the Commander of the Home Guard shall command the same, and shall promote the efficiency and discipline thereof by proper regulation, which shall be subject to the approval of the Councils of Philadelphia; and, when required by the Mayor of said city, he shall order out the whole or any part of the said Guard for the preservation of the public peace and the defence of the city, and during the existence of the said Guard shall determine the style of the uniform; *Provided*, uniformity of color shall be preserved in each regiment respectively, the equipment and arming thereof and the division of the same into corps of infantry, cavalry, artillery or otherwise.

SEC. 6. That every member of the Home Guard shall on being enrolled be duly sworn or affirmed to support the Constitution of the United States and of the State of Pennsylvania, to defend the city of Philadelphia when called upon so to do and to obey the orders of his superior officers, so long as he shall be a member thereof, but nothing in this act shall be construed to exempt any of the members of the Home Guard between the ages of eighteen and forty-five from military service either under the laws of this Commonwealth or of the United States, and that the said Home Guard or any portion thereof, shall be subject to the requisition of the State or General Government at any time: Provided that nothing in this act shall be so construed as to require the State to furnish, equip or pay said Home Guards, except when called into the service of the State by the Governor.

Approved May 16, 1861.

Colonel Siegel's Retreat.

SPLENDID MILITARY MOVEMENTS—HOW TO RETREAT BEFORE A SUPERIOR FORCE AND STILL WHIP THEM.

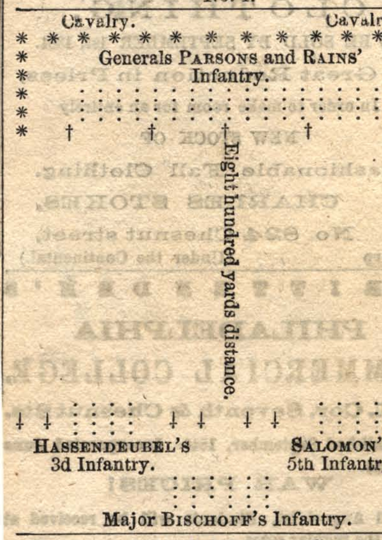
From the St. Louis Democrat, July 12.

It is conceded by all military men that the retreat of Colonel Siegel's command before the superior Rebel forces, under Generals Rains and Parsons, in the neighborhood of Carthage, Mo., on the 5th of July, was one of the most masterly military manœuvres the war has yet exhibited.—Indeed, it is claimed by many officers of large experience that a more admirable display of military science has never been witnessed in this country. It at once places Col Siegel in the front ranks of the military men of the day.

We present a few diagrams, which will help the reader to form a correct idea of the nature of the difficulties under which Colonel Siegel labored, and the quality of the generalship which finally extricated his command from the fearful dangers which beset them.

Here is diagram No 1, which represents the respective positions of the contending forces when the battle begun. The stars represent the cavalry, dots the infantry, daggers the artillery, and parallels the wagons:—

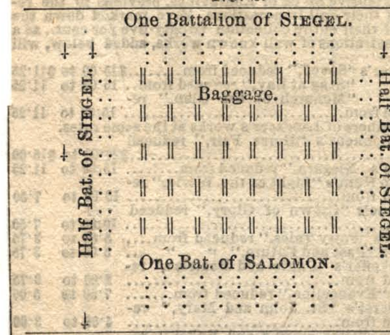
No. 1.


Cavalry.
Cavalry.
Generals Parsons and Rains' Infantry.
Eight hundred yards distance.
Hassendeubel's 3d Infantry.
Salomon's 5th Infantry.
Major Bischoff's Infantry.

The force of the Rebels under Generals Rains and Parsons were estimated at 5000, including 1500 cavalry. They occupied a high ridge in the prairie about seven miles from Carthage, their cavalry extended along the rear and on the flank, their artillery of one twenty-four pounder in the centre, supported by two six-pounders on each side, as represented. The position was a well chosen and strong one.

Colonel Siegel displayed his force of about 1100 men, to the very best advantage, four pieces of artillery in the centre, and two pieces at the extreme of each flank, the infantry stationed in columns on the right and left, and in the rear. In this condition the fight began, and continued for about three hours, when the Rebels' artillery, having been dismounted, and their centre broken, they commenced flank movements with their cavalry, threatening an attack in the rear, and the capture of Colonel Siegel's baggage train three miles behind. The Colonel sent back one piece of artillery and a detachment of infantry to guard a ferry, and then commenced a retrogade movement with his entire command, at the same time despatching an order for the advance of the baggage wagons. In this movement he preserved the order of his columns until the baggage train was reached, when he immediately made the following admirable disposition of his forces, as seen by diagram No. 2:—

No. 2.

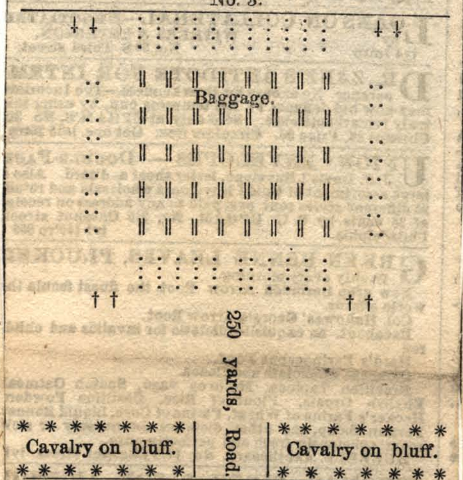


In the order as presented in the above, Colonel Salomon's battalion leading the front, the retreat was continued from about midday until five o'clock P. M., the enemy threatening on all sides, but being constantly repulsed by the well handled artillery and serried front of the infantry. The baggage wagons numbered about fifty, and were moved in columns of eight.

At five o'clock Siegel's force came to a small creek, just beyond which was a bluff intersected by the road to Carthage, along which he was moving. On the two sides of this divided bluff eight hundred of the rebel cavalry took position, prepared to resist the passage of the creek and road. The position was one of difficulty, and would have seriously perplexed any less skillful officer than Colonel Siegel. His head was cool, however, and to gain the advantage he resorted to a splendid stratagem, which placed his foes entirely at his mercy, and eventually secured the unimpeded movement of his command.

He ordered an oblique movement on the right and left of his forces, as if to pass around the sides of the bluff, at the same time advancing the two pieces of artillery on the sides to a position in front, giving Colonel Salomon's battalion the strength of two pieces on his right and two on his left. The oblique movements of the infantry were accompanied by a feint of the artillery in the same direction. The Rebel cavalry of course construing these manœuvres very much in their favor, rushed down into the road from both sides of the bluff, intending, no doubt, to make a grand charge upon Colonel Siegel's centre. With the quickness of thought, the movements to the right and left were reversed and a terribly destructive cross-fire was opened upon the Rebels, the distance being but about 300 yards, and the guns charged heavily with grape shot. In ten minutes the rout of the cavalry was complete. Diagram No. 3 will assist the reader in his appreciation of the brilliancy of this movement:—

No. 3.



Another manœuvre was of very great assistance to Col. Siegel, later in the evening, when he was trying to gain the woods near Carthage. By commanding his men to hoist their muskets high over their heads while marching behind a high bank, the Rebels were deceived as to the direction they were taking, and were drawn into a kind of ambuscade, where they suffered very severely.

Gaining the woods near Carthage and darkness coming on, the Rebels retreated, and Col Siegel, notwithstanding the great fatigue of his men, took up his line of march for Sarcoxie, a distance of twelve or fourteen miles, which he reached in due season, and took refreshments and a good rest for his men.

We challenge anything in the history of the wars of the country that will surpass this masterly retreat of Col. Siegel and his brave German troops.

Flags on a Lutheran Church Steeple.—Four beautiful American flags adorn the Lutheran church steeple in the town of York, Pa., which may be seen floating from the "spy holes" for miles around. They were placed there by the patriotic citizens of the large congregation worshipping in it. They are each seven feet in length.

BOILER EXPLOSION AT RICHMOND

SERIOUS ACCIDENT.

TWO MEN KILLED.

At about ten minutes before six o'clock, on Saturday evening, and but a very short time after the employés had left, a terrible accident occurred at the Penn Works of Messrs. I. P. Morris & Co., situate in Richmond street, near Cumberland. The accident was caused by the explosion of a boiler, and resulted in killing one man outright, and so seriously scalding and injuring another that his death took place shortly after.

It appears that there were three cylinder boilers, each twenty-six feet long and forty inches in diameter, with a heater twelve feet long and twenty-four inches in diameter attached, all of which were situated in a small building adjoining the large machine shop, designated as the boiler room. This was built with nine inch walls, and was about sixteen feet in height. North of, and immediately joining the boiler room, was the blowing engine room, containing two blowing engines and one hoisting engine; adjoining this, and in the same direction from the boiler room, was the brass foundry. Both of these buildings were about the same height, and the walls of the same thickness as those of the boiler room.

From various statements, we learned that two men had been deputized to stay after the usual working hours, and aid the engineer in cleaning out the boilers. The fire had been drawn out from under the boilers by the engineer, and the three men were standing talking together when the explosion of the middle boiler took place, instantly killing the engineer, Patrick O'Neal, and scalding the other two. Thomas Herbert, one of those, was scalded so badly as to result in his death at eight minutes past eleven o'clock that night. The other, John Parker, was not injured so badly but that it is hoped he will entirely recover. His physicians do not pronounce him dangerous, as they think he has sustained no internal injury whatever.

The boiler that exploded separated in a seam about 15 feet from the northern end, forcing the adjacent eastern boiler from its resting place into the foundry and machine shop, knocking down the wall, and throwing the western boiler with the heater, a distance of 30 feet, into the coal pit, without seemingly the slightest injury to either of them.

The southern end of the exploded boiler was blown through the wall with such force that its onward course was not checked until it reached a new large chamber for the turbine wheel for the Fairmount Water Works, which was completely broken to pieces. This turbine chamber is a very large casting of about two inches thick, and was lying at a distance of about one hundred feet from where the explosion took place. This southern end was so battered and broken as to render it useless for anything but old iron.

The northern end of the boiler, which is fifteen feet long and in good condition, weight one ton, was lifted from its resting place, and forced, with the seeming velocity of a cannon-ball, through four nine inch walls, at a distance of about one hundred feet. It first penetrated the blowing engine room, completely disabling the hoisting and one of the blowing engines; the other lying just far enough to the eastward to escape the slightest injury. It also, in its course through the engine room, broke the large fly-wheel driven by these two engines, after which it went through the end walls of the brass foundry, completely clearing that place of its contents.

It is a singular thing, that while the northern end of this boiler penetrated clear through these places, it did not subject the roofs nor the side walls of the brass foundry to any perceptible damage.

The smoke-stack was thrown down with such force, near by, that it sustained a great deal of injury by indentations.

The steam whistle was blown a distance of 200 yards, on the wharf owned by Messrs. I. P. Morris & Co.

A piece of the blowing engine, weighing about 300 pounds, together with a portion of the cylinder, of about 60 pounds weight, were carried by the force of the explosion a distance of 150 feet.

The bricks constituting the walls were blown in every direction. About half of a cart-load of these were ejected with such force as to break the sash and windows of the pattern shop, which is a large building, about two hundred feet distant from where the explosion took place. Fortunately, however, there was no other damage done to that structure or its contents.

Some of the bricks were found at a distance of about one hundred and fifty feet, having broken a new fly-wheel, five-and-a-half feet in diameter, in such a manner as to render it useless.

The present appearance, immediately about the scene of the disaster, is that of one complete mass of ruins. The rule of this establishment is to pay off all the men on Friday night, otherwise, had the disbursement been left until Saturday night, as is usually the case in other establishments, there would undoubtedly have ensued more serious loss of life to the employés of this firm. Men were employed all day yesterday in fitting up a tubular boiler, in order that the work may not be delayed. It was expected that they would have steam up, ready to drive the engines of the machine shop, this morning.

The boilers had been used and tested for nine years, and were supposed to be, without a doubt, beyond the reach of anything like an explosion. They had often borne the same amount of steam that they had on Saturday, but it is supposed that a weakness in one of the seams was the cause of the explosion, the pressure being too great for it to withstand any longer.

The engineer, when found, had a heavy piece or bar of iron lying across his breast, his neck and legs being both broken, and a portion of his head missing. His clothes were completely stripped from his person, but his features were disfigured very little. It is supposed that he was bending over at the time the accident occurred, and the flying missiles striking, prostrated him at once. He was a man of about forty-five years of age, and leaves a wife and nine children to mourn his loss. Two of the children are married. It is rather a singular occurrence that he had a daughter, who met with an accident in the machine shop of this establishment, and was buried just a year before his death. Injuries were sustained by the father at that time, in attempting to rescue his daughter from her perilous situation.

140

[For the Sunday Dispatch.]

Mismanagement of the Fairmount Water-Works.

Since my communication of Oct. 21st, the laying down of the thirty inch main from the tower-pipe is finished to the stand-pipe. It enters the latter, I find, at quite an acute angle, in direct opposition to the flow of water to the mains communicating with the several reservoirs. A worse arrangement could not be adopted. To protect this pipe from frost will be difficult, more especially at the north end, where it is in contact with the arch and between the water. The remainder will require the continuance of one of the walls, or a mass of earth to mar the beauty of the mount, and exhibit a sample of bad engineering which few would be willing to acknowledge.

It appears to be a favorite plan with the management, in laying the foundations for the pumps and machinery, to commence with a dry wall of rubbish work, composed of small stones, covering the surface with cement, on which is placed the cut-stone work. The total depths and area of the latter is certainly insufficient, in some parts, to firmly support the weight and action of the machinery.

The new pumps are to be of a different construction from those in the old works (except being double-acting). The valves are placed in separate vertical chambers, one at each end o the pump-cylinder, with air-vessels some five feet high on each chamber, the latter connected by a pipe and with the rising main. The attachments of all these pipes are rectilinear, from the moment they leave the *iron* floem of the turbines to the stand-pipe on the plateau at the foot of the reservoir, there being no less than twelve *right angle* connections. Two or three of these may perhaps be modified by short curves, but the remainder are fixed. The water from the old pumps pass but two *curved* right angles in its passage from the pumps to the basins. The new pumps could have been arranged with no greater number of angles, and two circles of large radius.

When the present Water-Works at Fairmount were designed and constructed, (in 1820 and '21, I think,) the water power of the Schuylkill, at the driest part of the year, was measured, and provision made for the number of wheels which the minimum quantity of water would drive. How accurate this calculation was can be seen any dry time by looking at the dam when all the wheels are working.

What probable good can, therefore, result from an increase in the number of water-wheels, which will consume as much water as the present ones, one-thirtieth of which only passes up to the basin? They will not be wanted when water is plenty, and when it is scarce, where is the power to drive them? Suppose an accident should happen the dam, (and such a thing is probable, although not probable if attended to in time by support on the lower side,) where then would be the power to supply the city with one of the most necessary blessings of life? There are only five or six steam pumps, and three of them none of the best, with two basins. Only reflect a moment on the condition which the city would be in, exposed to all the ravages of fire and disease for want of the purifying element, and how could such a misfortune be remedied? A new dam could not be built in a day, a week, or a month; and here the city is spending thousands of dollars on a chimera that will not add one gallon more to the daily supply of water to its inhabitants, for the simple reason that when most wanted the power is deficient, and when there is power to drive the pumps there is no reservoir to receive and retain the water which is pumped up.

The want of water felt at times by consumers is not owing to a lack of water in the basin, but because the street mains are not large enough to keep up the pressure at the service-pipes, the force of the head being spent in overcoming the friction of the water's increased velocity through the main. Some two or three feet reduction in height of water in the basins (and it seldom exceeds that) make but little difference in the quantity discharged at the service-pipes, under a head of from 50 to 75 feet. The difference in velocity is the square root of the height. For instance: the theoretical velocity of water under 53 feet head is 58 feet per second, and under 50 feet head 56 feet per second; then, if 53 feet head gives 10 gallons per minute, 50 feet head will give 9⅔ gallons in the same time; for the quantity expended through equal apertures in equal times, under unequal pressures, are as their velocities simply.

Would not the most judicious plan for the extension of our Water-Works have been to have first constructed new reservoirs, doubling the capacity of the present ones, if thought necessary, and then to have had erected by competent builders, good Cornish pumping engines, such as Messrs. J. P. Morris & Co. placed in the Spring Garden works (not such abortions as the Twenty-fourth ward has), placing them in a proper position to supply basins on the high ground east of Pennsylvania avenue and north of Coates street, where coal could be procured by railroad or canal for their consumption? Then the city would have a reliable power to resort to for the supply of water in case of any accident befalling the old works, or scarcity of water in dry seasons, working three engines at first, only when found necessary to supply any deficiency of water by the breast-wheels—bringing them gradually into use as the demands of the city required, increasing the size or number of street mains until every consumer had a full supply of water at all times and in all parts of the city, making arrangements in planning the engine and pump-house for its extension and increase of power, as the demands of the city for water rendered it necessary. 244

Something similar to the above would have been adopted by any competent man, or set of men, who had the interest of the city at heart, in preference to the present imperfect attempt to attain an end without first well considering the means. This costly experiment to give political favorites a fat salary, without reference to their capacity, appear to be carried on without any set plan in minor details, or, in fact, in some of the principle parts. We instance the following: the laying a stone in its place and then facing it off to suit the next—putting work together at hazard and then finding it wrong, and having to remove or alter it—finishing off plots of ground and avenues and then covering them with building materials and shanties—converting the park into a compost yard, stone quarry and sand pit—endangering the safety of the reservoir, to shove off bad engineering and make room for fancy towers—building childish waterfalls, putting the city to the expense of a costly set of experiments on models of water-wheels not wanted, and on which no dependance can be placed as to their economy, for it is a well known fact that the effects of a model and a full sized wheel are vastly different, and the city will find there is a vast difference between the *estimated cost* of the present *improvement* and what it will ultimately cost by the time it is finished. The only improvement I see at Fairmount is the laying down of flag stones in place of the decayed wooden floors of the present pump rooms, making a lasting job and a good finish. In speaking of the old works permit me to refer to their management. Three breast-wheels have the water let on to them, about on a level with their centre by the *lowering* of the wheel gates, permitting the water to flow *over* their tops from, or very near its surface, into the buckets of the wheel, whose velocity of circumference at a maximum was intended to be a little less than the velocity of the water at the point of impact, which would then enter the wheel with very little noise or waste.

Now, instead of working these wheels as the builder (Mr. D. Bromely) intended, or their principle demands, by drawing from the surface, no attention is paid as to the head of water over the opening, but the gate is lowered away until the wheel attains its full velocity, without any reference to the amount of water that enters the interior of the wheel through the air openings of the soleing, retarding the whole action in its endeavor to enter and escape—reacting on the backs of the float boards, (or buckets,) both on its entering and leaving them—keeping the passage-way in front of the wheels wet by the spray thrown off, with a thundering, disagreeable noise. It is not surprising, therefore, to see new float boards every few days show their white faces as the wheels revolve, when they are compelled to wallow, as they do, in their own water. I should suppose that common sense would teach any man what is necessary if he has the least knowledge of hydraulics; and if not, he is unfit for the station he fills.

The application of the water to these wheels could be much improved; but for goodness' sake work them *now* on the principle they were intended to act upon, and do not *try* to destroy them for the purpose of placing laurels on the brow of men unfit, in point of practical knowledge, to have their names *associated* with those who first planned and constructed our Fairmount Water-Works.

That a head is wanted to plan and a hand to execute this trust is so palpably manifest, that it calls for some action on the part of those having the good of Philadelphia at heart to stop a work that will disgrace the city and benefit none. But in trying to remedy the evil let not politics fasten a *less* competent party on us, as from present indications will be attempted by one of the dominant party's representatives, if possible.

MECHANIST.

P. S.—I must here beg leave still to differ from "Locomotive" respecting the pipes at the foot of the folly-tower. Not that I advocate or endorse such an absurd plan of arrangements, but because of the pipes large size, and the somewhat favorable angle of about one hundred and thirteen degrees at which the three mains from the pumps enter the single large pipe, with a *rounded* connection of some three feet radius. The water from each of these thirty inch mains will enter this single pipe with an average velocity of not over 1.56 feet per second, or 1.06 miles per hour; this aggregate quantity entering the tower-pipe at a velocity of 1.83 feet per second, or 1¼ miles per hour, passing up the tower with a velocity of 1.17 feet per second, or 8.10 miles per hour. These facts, and the average velocity of the water in each pump (2.17 feet per second, or 130 feet per minute) being greater than its velocity in any other part of its passage to the tower, are my reasons for *thinking* the difficulty will not be so great as anticipated until the water reaches the outlet pipe near the top of the tower, when commences the real difficulty, as I before stated.

That the causeway over the forebay can be widened, if necessary, there is not the least doubt; but there *is not* at present any foundation or abutment for an arch on the west side, next the wheel house.

M.

The Kensington Water Purified with Lime.—The water supplied from the Kensington reservoir, is now perfectly sweet, and all complaints about its impurity have ceased. The mode of purifying it was as follows:—Ten bushels of lime to every million gallons of water in the reservoir, was slaked in boxes attached to rafts, and as the lime slaked so as to become about the consistency of cream, it mixed with the water in the reservoir, by this means killing all organic matter, and precipitating it to the bottom. The water will now remain sweet until the organic matter is again formed, when it will undergo the same process of purification. 248

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lantic Railroad, for $6000.

The Philadelphia Waterworks.—The following statement exhibits the operation of the Philadelphia waterworks for the month of March. The amount pumped during the month was as follows:—Fairmount works, 277,490,545 gallons; Schuylkill works, 181,917,450 do; Delaware works, 67,304,400; 24th ward, 19,133,100, making a total of 545,845,495 gallons, being an average of 17,607,919 gallons per day. The total amount pumped, when compared with the month of March, 1859, shows an increase of 105,756,125 gallons, or a daily increase of 3,411,487 gallons. This result has been brought about by a reassessment of the water rates and the introduction of water into the many new buildings erected during last year. This large increase shows the necessity of hurrying the completion of the improvements to the waterworks, so as to meet the demand. 251

Fairmount and Fairmount Park.—The improvements to the grounds attached to the Fairmount Water Works, and to Fairmount Park, are progressing. The approaches to the reservoir are nearly completed, the walks having been graded, and the bridges across the ravines erected. One of these paths or walks, commences near the entrance gate on Callowhill street, and the other near the old wooden steps, nearly all of which have been removed. The coffer dam along the south side of the mound dam, will soon be completed, when the foundations of the new mill-house will be laid, and the building erected as soon as possible. About one hundred men are now employed at Fairmount Park, in carrying on the work of improvement commenced last season. About 1500 trees, besides shrubbery, have been set out.

Corner Stone Laid.—The corner stone of the new stand-pipe at Fairmount, was laid on Saturday. The daily papers, Mayor's message, Chief Engineer's report and the names of the 54 employees of the Water Department that have volunteered to fight for the Federal Government, were placed in the stone. The present employees have started a monthly subscription to aid the families of those now in the U. S. The new stand-pipe will be connected with the new Turbine wheels. 276

New Railroad Bridge.—One of the piers for the new railroad bridge over the Schuylkill is now finished, and preparations are being made to lay the foundation for one of the others. The unfavorable weather during the winter and spring very much retarded the work.

WATER SUPPLY OF BOSTON.—On last Friday, says the Boston Traveller, the new aqueduct from Dudley Pond to Lake Cochituate was opened. The connection is through an eighteen inch iron pipe. Dudley Pond is almost 60 rods from the Lake, and covers about 90 acres, and with its present head of 13 feet, it can pour through the pipe into the lake six millions of gallons in 24 hours. The lake is now eleven inches lower than ever before since it supplied Boston with water. The cost of the improvement is about $10,000.

ENGINEERING DEPARTMENT.

Performance of the Brooklyn Pumping Engine.

We are indebted to the courtesy of Samuel McElroy, Esq., Engineer in charge of the Ridgewood Division of the Brooklyn Water Works, for the following memorandum of the Pumping Engine recently erected and put in operation for the supply of that important city.

The engine house of the Brooklyn Water Works is situated about five miles east of the City Hall, at the foot of the rapid slope which sweeps from the plain of the Jamaica Bay to the Ridgewood Heights on which the Reservoir is located. The length of conduit which brings the water from the ponds on the southern slope of the Island to the pump-well is about twelve miles, constructed with a capacity of supply of 40,000,000 gallons per day. The pump-well and engine-house are arranged for four pumping engines, each capable of lifting one-fourth of the conduit supply. Two engines are included in the present contract, one of which is built, and each has a force tube laid to the Reservoir, 3 feet in diameter and 3,400 feet long. The pumping lift from the well to the Rervoir is 163 feet.

The plan of engine, described in the contract with H. S. Wells & Co., is similar to the single-acting Cornish engine, in use in Europe for about 200 years, and favorably known for its economy and efficiency, on a large scale of action. This plan was subsequently modified, and the present engine in use, put under construction February, 1858, by Messrs. Woodruff & Beach, of Hartford, Conn.

Of the large number of engines, of various patterns, presented to the Water Board for adoption, this plan was finally accepted because it promised to secure all the benefits of the Cornish engine, with the additional feature of double-action, and with some important advantages in the control of the pumping column of water, and the valve motion. In place, therefore, of a single-acting cylinder of about 15 feet stroke and 100 inches bore, the same work is now performed by a double-acting cylinder of about 10 feet stroke and 90 inches bore. In place of lifting a massive counterweight with a plunge of some 50 inches diameter, doing its pumping only as it descends, with reactions in the force tube produced by such alternate strokes, we now lift alternately the upper and lower pump buckets, (each of 36 inches diameter), which pass their contents through each other in such a way as to keep the main water column constantly in motion in the same direction. Some conception of the difference in effect may be derived from the fact, that while the wave reaction of some single-acting engines, on which we have experimented, sometimes makes a difference in pressure of 20 to 50 pounds on the square inch, in the recent trial of this Brooklyn engine the greatest variation was 5 pounds, and as a general rule did not exceed 3. In place, also, of the rude valve motion peculiar to the English engine, we now have all the control of the Cornish cataract, with the ordinary rock-shaft motion of a crank engine.

In consequence of the premature supply of water to the city before the works were complete, their proper completion has been much embarrassed; and the engine has been worked for several months without being properly adjusted as to its length of stroke, pump valves, valve motion, and counterweights. Quite unexpectedly to all parties it was determined on the morning of the 25th ultimo, to give it a trial of pumping capacity, and at 1 P. M. the arrangements for measurement were completed so as to obtain accurate results of performance. The engine had been at work from 8 A. M., and our system of notes was commenced at 1 P. M., and continued until 1 P. M. of the 27th ultimo, when the observations ceased, although the engine continued to run until 5 P. M., making a trial of forty-eight hours, and a continuous run of 57 hours.

By *actual measurement* in the Reservoir, made from hourly observation, it was ascertained that the delivery in 48 hours was 21,723,486 gallons, or 10,861,743 gallons per day. The number of double strokes of the engine was 24,668, being an average of 8.56 per minute; on several occasions the engine has been run at ten and a half and eleven strokes per minute, and when properly adjusted for its work, there is no doubt whatever of its capacity to pump 15,000,000 gallons per day. At present, this test establishes the ordinary working capacity of 10,000,000 gallons per day required; and presents this engine to the engineering profession as the *most powerful pumping engine in use in America, with but two or three equals in Europe. The quietness and ease with which this enormous work is performed, places this engine in the first rank of its class.*

No arrangements were possible under the circumstances to test the economical duty of this engine. Coal had to be procured in small parcels of inferior quality, during the trial; the consumption, however, was 15.75 tons per day, and the actual duty, as referred to the weight of water pumped, was about 44,420,000 pounds, raised one foot with one hundred pounds of coal.

For the American Railway Review.

The Effects of Heavy Locomotives on the Superstructure of Railroads.

NO. ONE.

The endeavors to reduce the weight of the locomotive and at the same time not to impair its efficiency, have exerted a great deal of interest among railroad men. All must perceive the importance of such an effort; as it is now, the companies stand, as it were, between two fires: with the heavy engine they are destroying the track and bridges at an enormously rapid rate: without this heavy engine they are unable to do the work of the road, hence the importance of some arrangement that shall ensure the necessary amount of steam power and traction, and at the same time reduce the weight.

The great disparity that exists between the weight on the driving wheels of the engine and the truck wheels of the train, shows that the destruction of the rails and cross-ties is due to the engine rather than to the cars, for the effects cannot be produced by a lesser impart, preceded by the greater, under the conditions that govern the case in hand.

It has been carfully computed that at least $26,000,000 per annum is the depreciation in the superstructure of the railroads of the United States—mostly caused by the enormous weight of the locomotives in use.

In Belgium, where the roads are more nearly level, and the speed is much less than in this coun-

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The New Turbine Water Wheels, now being constructed in this city, for the extension of the Water Works at Fairmount, will be the largest ever made in this country, each of them being nine feet in diameter, two feet more than the one now in use at Fairmount. It is calculated that the three new wheels will force as much water into the reservoir as the eight breast wheels and the turbine, just doubling the capacity of the works. The size of the new wheels renders the construction of new and large tools necessary. The lathe upon which the casing is to be faced will have to swing a portion of the case, which measures nearly 18 feet in diameter. It is said that no shop out of Philadelphia has the capacity for making these wheels, the cylinders for the Ericsson steamer having been sent from New York here to get bored.

Turbine Water Wheels.—The experiments which have been progressing for several months at the Fairmount Water Works, with various Turbine Water-wheels, are about being brought to a close, after the trial of some sixteen different models. The experiments have proven beyond a doubt that the wheels produced by American manufacturers and inventors excel all others that have been introduced from foreign countries. A wheel of this kind, of 125 horse-power, will, it is calculated, pump six millions of gallons of water per day, with a fall of water from eight to fourteen feet. The Turbine Wheel, now at Fairmount, has a power of about 40 horse, and it pumps nearly one million and a half of gallons per day. The work of building the wheel-house at the Mound dam will be resumed on Monday. Mch 17/60

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to support a spire, which is one of the loftiest in the city.

Sep 3/61

The Committee on Water have returned from their visit to New York, which was made for the purpose of examining the improvements made to the Water-works of that city, with a view of introducing those found worthy in our own city. The Brooklyn Water-works are highly spoken of by the committee, and we understand that a recommendation will be made to Councils to construct the Water-works in the 21st Ward upon the same plan. It is estimated that the cost will be about $60,000.

Improvements at Fairmount.—The stand-pipe which is to be connected with the new Turbine water wheels at Fairmount, has been put in place. It is 74 feet high, 5 feet in diameter, and constructed of wrought iron. This pipe is to be encased in a stone tower, in the Norman style of architecture, and the top connected by an arch with the old stand pipe near the north west corner of Fairmount Hill, the top of the arch to be used as a connecting link with one of the promenades. The pipe connecting the two stand pipes will be in the centre of the arch, and entirely out of view. The improvement will add a new feature to the attractiveness of Fairmount. The Reservoir at this place is now being repaired, and to enable the men to work with facility, about three feet of the water was let out. The new mill house is progressing quite rapidly, and it is expected the building will be completed before the close of summer.

Ald. Dayton name him.

Ald. Douglass: at this time I am not at liberty—I will give it to you some other time.

Ald. Dayton: if he is ashamed of his name he cannot amount to much.

Ald. Douglass, He is not ashamed of his name. Ald. D. then cited figures to show while at the rate of a delivery of 3,000,000 of gallons daily, the Brooklyn water cost $4 68, per 100 gallons, the Croton cost only five-eights per cent, and was the cheapest water in the United States. Charging as we do, two cents per 100 gallon for the water, we were not receiving our half the actual cost of furnishing. This showed the necessity of getting the most economical engine possible, which he could prove by eminent engineers was not the fact in this case. For these reasons he was not prepared now to enquire.

Ald. Dayton cited the report of the engineers to prove that the data of Ald. D. was not reliable. It was merely the statement of one engineer finding fault with another and not daring to show his name at that. Let him put his name in print and he would be met promptly enough.

Ald. Van Brunt asked that the question might be divided, and the vote first taken on accepting the communication and placing it on file.

The motion was agreed to.

Ald. Van Brunt moved that the resolution endorsing the engine be referred to the Water Committee for report. He did not feel himself to be enough of a mechanic to decide in regard the merits of this engine, and desired, at least, the report of a committee on the subject before he endorsed it.

Ald. Strong hoped the subject would be disposed of as suggested by Ald. Van Brunt. He was pleased with his visit to the Engine House last week, and pleased, also, to notice the improvements which had been made on the engine since he last saw it. He had made several visits to the house, and examined the engine from time to time, and had been often told it was perfect, although, to his inexperienced eyes, even, defects were apparent to which he had taken the liberty of calling attention. Since then he had noticed that most, if not all, of them had been removed. He thought the Common Council would do wisely to accept the engine, and it was in as good condition as it can be put in, but he doubted the policy of passing a resolution taking the responsibility of the work from the Commissioners who have its construction in charge) and undertaking to direct them to have built another engine on the same principle. He doubted very much if the contractors would build another one themselves. He was at Hartford and witnessed this engine while it was in progress of construction and professed therefore to know something about it, and although he would not state positively that such was the fact, yet he was satisfied that the parties would not build another such an engine. He thought that engines could be built upon a plan superior to this one, and that a board of competent engineers would verify what he was saying. This was a question however on which the Board was not called to judge; it was a duty devolved upon the commissioners, and with which it was entirely unnecessary the Common Council should interfere. Better let the matter rest where the law had left it.

Mr. Dayton further urged the excellence of the engine.

When the question being taken the motion of Ald. Van Brunt was agreed to. Yeas 13, Nays 1.

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tled to one vote.

Mch 3/60

LOCAL AFFAIRS.

Extension of the Water Works.—The Committee on Water Works, of Council, have agreed upon the following propositions for the extension of the mains and finishing the work now in progress, and which will be submitted to Councils. The Committee suggest that a main be laid to connect the Corinthian avenue reservoir with the Kensington reservoir, and for supplying the deficiency in the Twentieth and Twenty-first Wards, and the districts supplied by the Delaware works. Also, that a main 20 inches in diameter, be laid from the Kensington reservoir along Lehigh avenue to the Frankford road, which will cost $22,000. The Committee are satisfied that these mains are positively necessary.

The Committee recommend that the Kensington Water Works be abandoned, and that this district be supplied by the Schuylkill Works, because the Works of Kensington are not of a sufficient capacity to supply the district without laying an additional pumping main, which would cost at least $50,000, and because the machinery is of the most expensive kind to maintain. The Committee also recommend the construction of a large pumping engine at the Schuylkill Works of sufficient capacity to pump, say 10,000,000 galls. per day, into the reservoir. The construction of this engine will reduce the annual expenses of the Department as follows:

At least 2250 tons of coal, - - -	$7,875
Wages of five firemen, - - -	2,250
	$10,125

And also do away with the whole expenses of the Delaware Works, amounting to $11,515, less 464 tons of coal, amounting to $1624, which will be required for the large pumping engine at the Schuylkill works, making a reduction in the annual expenses of $20,016. The engine will cost $85,000. The Committee also recommend the erection of a reservoir in the Twenty-fourth Ward, by which the revenue of the department will be increased. The expense for the erection of the Reservoir is estimated at $50,000, and the cost of a 20 inch main to connect with the stand, about $32,000.

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street Railroad. Adjourned.

25 April

The Philadelphia Water Works—A Better Supply of Water for Kensington.—Mr. Cassin, the Chief Engineer of the Water Works, sent a communication to Councils yesterday in reference to the subject of furnishing a better supply of water to the old district of Kensington, as well as other portions of the city. The Engineer states that he considers it impossible to supply pure water, for domestic purposes, from the river Delaware at the works located on that river, as the sewers opening into the Delaware discharge at the rate of 13,000,000 of gallons daily. The water is further deteriorated by the emptying from Gunner's Run, which takes place at less than fifty yards above the location of the Works. To supply the old Kensington District from the Schuylkill, it is proposed to elevate the Kensington reservoir, and to connect the latter with the Corinthian avenue reservoir.

It is also proposed to connect the Spring Garden reservoir and that at Corinthian avenue, by a 48 inch main, and also a 48 inch main from Fairmount. This main would be of sufficient capacity to fully supply the Kensington reservoir, and to allow all the distributing mains on the high parts of the district included, between the Spring Garden reservoir and Tenth st., to be attached, thus giving a reliable supply to the higher portions of the 15th and 20th Wards. At present the Kensington works supply the 17th, 18th, 19th, and parts of the 16th, 23d and 25th Wards, and the greatest demand on the works is during the months of July and August, at a season when there is a possibility of low water in the Schuylkill, and the consequent inability of the Fairmount and Spring Garden Works to make up the additional demand which would arise from the connection of the Kensington district. Should any serious accident occur in the machinery at the Spring Garden Works, a farther inability would necessarily arise.

The capacity of the several reservoirs is as follows:

The Corinthian Avenue reservoir,	37,500,000 gals.
Spring Garden reservoir, - - -	9,800,000 "
Kensington reservoir, - - - -	9,400,000 "
Total, - - - - - - - -	56,700,000 "

The demand on the Corinthian Avenue reservoir is about three and a half millions of gallons per day, and it has therefore a capacity of ten and three quarter days' supply. The demand on the Spring Garden reservoir is about seven millions of gallons, daily, and its capacity is therefore not quite one and a half days' supply. The demand on the Kensington reservoir is about two and a half millions of gallons, daily, and its capacity less than four days' supply.

The suggested elevation of the Kensington reservoir, added to the preceding, would make a total storage capacity of the three reservoirs of 65,000,000 gallons, and the total daily demand on them is 13,000,000 gallons, or their united capacity would be five days' supply by connecting them as I have herein suggested. This connection would insure five days' supply to the whole of the 11th, 12th, 13th, 14th, 15th, 16th, 17th, 18th, 19th and 20th wards, and to parts of the 21st, 22d, 23d and 25th wards, in portions of which at present there is not more than a supply for half this time, and in some localities a supply for only a few hours. The connection of the three reservoirs here alluded to would not only give a better supply, but would so equalize the storage capacity that localities now having only a few hours' supply, would be increased to five days; and some portions of the district supplied from the Fairmount works could be added, so as to entirely equalize the supply to the whole city. Such an arrangement would somewhat increase the supply in the district watered by the Fairmount works; and the increase and consequent advantages to the districts supplied by the Kensington and Spring Garden Works, are sufficiently obvious.

The total quantity of water supplied by the Kensington Works in 1861 was 983,805,740 gallons, or a daily average of 2,695,358 gallons.

The total cost of supplying the above from Kensington Works was $22,470 12.

To supply the same quantity from Spring Garden works, would cost $11,884 37; and the same quantity supplied from Fairmount works, would cost $11,126 84. These sums include the interest on the cost of the works, and, exclusive of such interest, the cost of supply would be as follows:—From Kensington works, $13,468 30; Spring Garden works, $8,382; Fairmount works, $1,632. The value of the property owned by the City, now occupied by and including the Kensington works, is about $60,000.

The district supplied by the Kensington Works contains a population of 110,000, and pays water rents amounting to $70,000. The first four wards of the city which are supplied from Corinthian Avenue reservoir, contain a population of 100,000, and pay water rents amounting to $95,000. In these two cases, the smaller population pays the larger amount of water rents. The increased demand in the Kensington district in 1861, over that of 1856, is little more than 590,000 gallons per day, while in the district supplied from Fairmount Works during the same period of five years, the increase is about 2,500,000 of gallons daily. In the Spring Garden district, the increased demand in the same period is about 1.500,000 gallons per day; and in the Twenty-fourth Ward, where the facilities for obtaining a supply are not reliable, and are inferior to those of the Kensington Works, the daily increase in a period of five years is over 800,000 gallons. These facts are given for the purpose of showing that causes exist rendering the demand for water supplied by the Kensington Works, comparatively more restricted than the demand from any other of the water-works of the city.

The following is the estimated cost of the work submitted to Councils according to resolution:

For 40-inch connecting main on Master street, from Spring Garden Reservoir to Tenth street, together with connections to service pipes in cross streets from Twenty-fifth to Tenth st., with stops, branches, &c., complete...	$93,150
For 30-inch main running on Master st., from Tenth to Seventh street, thence, on Seventh street, to Kensington Reservoir..................	79,569
For building retaining wall around and raising Kensington Reservoir seven feet higher, or to the same level as Corinthian avenue and Spring Garden Reservoirs..................	68,335
For 48-inch connecting main from Corinthian avenue to Spring Garden Reservoir..................	46,500
Total..................	$287,554

141

COMMON COUNCIL.

MONDAY EVENING Jan. 23, 1860.

Present—Ald. Kalbfliesch in the chair, and a quorum of members,

The minutes of the last meeting having been read and approved.

A communication was received from the Water Commissioners as follows:

To the Mayor and Common Council, &c:

GENTLEMEN—This first pumping engine contracted to be furnished by H. S. Welles & Co., having been completed and tested to the satisfaction of the Chief Engineer, a copy of whose certificate to that effect is hereunto annexed, the same has been accepted and is hereby transferred to the permanent Board of Water Commissioners, in accordance with section 2 of the act of April 16, 1859.

By order of the Board,

CERTIFICATE OF THE ENGINEER.

GENTLEMEN—The pumping engine of the Ridgewood Engine House, built by Woodruff and Beach, of Hartford, for Messrs. H. S, Welles & Co., has this week been tested for the capacity and duty tests specified in the contract, and I am now able to certify that she is acceptable under these tests, having delivered into the Reservoir exceeding ten millions New York gallons in 16 hours, and having also exceeded the rate of duty these required of 600,000 lbs of avordupois, raised one foot high with one pound of coal.

The Engineers who, by the direction of the Board, have assisted me in this trial of the engine will make their report to you next week. In the meantime, the accompanying certificate from them gives the result above specified.

JAMES P. KIRKWOOD, Engineer.

Ald DOUGLASS suggested that the matter lie over for one week No harm could arise from it, and besides he thought the test to which the Engine had been subjected, was not as complete as it might have been.

Ald. DAYTON hoped it would be at once accepted and turned over to the permanent board. To lay it over would be simply creating a doubt in the mind of the public as to the Engine. Those of the board who visited it on Friday—he was sorry his friend from the tenth was not there, but probably his business was such—

Ald. DOUGLASS, I was there and the gentleman saw me there,

Ald. DAYTON, did not remember it when he spoke. If he was there, what more could he learn by laying it over. After the full examination there made, after the completing testing of everything, without finding any defect—first by the Chief Engineer of the Water Works, and by three other experienced engineers whose reputation is staked on their recommendations, by the eminent engineer in charge of the works; then by the builders, who would not permit their work to be turned over unless they believed it completed; and then, too, by their engineer, Mr. Wright, who had taken out a patent for this engine—what more examination was required. He (Ald. D.) considered it one of the greatest pieces of machinery in the country. It was to the glory of Brooklyn that we had it. He would move that the communication be accepted and placed on file, and that the following preamble and resolutions be adopted:

Whereas; The Pumping Engine at Ridgewood engine house, has been completed and accepted by the City, and it is in the opinion of this Common Council the most desirable Engine for the purposes intended therefore

Resolved—That the Water Commissioners be requested to agree with the Contractors for the second Engine called for in the contract to be similar to the present one, and to employ the experienced and efficient engineer Samuel McElroy (under whose supervision the present one was constructed) to take charge of its construction and erection.

REPORTS OF COMMITTEES.

By Ald. VAN BRUNT—Declaring the buildings corner of Third avenue and Twentieth street dangerous, and directing their immediate rebuilding. Adopted.

From Grading and Paving Committee—Favorably on the petitions to grade and pave Thirteenth street from Third to Seventh avenues, and directing the publication of the usual notice. Adopted.

From the Law Committee—Draft of an act for repaving or macademizing, &c., Flatbush avenue, &c. Tabled for one week.

From the Assessment Committee.—In the matter of the assessment for Fifteenth street, grading and paving, with a new roll, and recommending the confirmation of the same.

Ald. SCHOLES suggested the matter lie over two weeks.

Ald. VAN BRUNT moved that the assessment be confirmed. Adopted.

Same Committee—Recommending the confirmation of the assessment for Warren street sewer. Confirmed.

Same—Favorably on petition of Mrs. Jane E. Miller, for cancelment of tax.

Wm. Bates for cancelment of tax sales, etc. Of Charles Stiles for same. Adopted.

Same—Fixing the limits of the opening of Butler street, from Columbia street to the East River. Adopted.

From the Railroad Committee—Directing the City Clerk to advertise for proposals for the privilege of laying down tracks and using cars drawn by horses, from the South Ferry, through Atlantic avenue to Flatbush avenue, through Flatbush avenue to Fifth avenue, through Fifth avenue to Thirty-seventh street, with a branch from Fifth avenue through Third street to the City line, the route through Atlantic street, to be subject to the rights of the Brooklyn and Jamaica and Long Island Railroad Co. Adopted.

Same, directing the City Clerk to publish a similar advertisement in reference to tracks on Furman street, Powers street, Lafayette, Bedford and other avenues.

The PRESIDENT suggested as the consent of the parties on the street had not been obtained for this route, the Common Council had no power to take the action proposed.

Ald. DOUGLASS withdrew the report.

Same committee—Recommending the amendment of the city ordinances on the petition of the Broadway Railroad company, so that the license fee for one-horse cars should be *ten* dollars, and for two-horse cars *twenty* dollars. Nothing in the ordinance to be so construed as to authorize the use of one-horse cars, except by express permission of the Common Council.

There was considerable discussion and much objection manifested to the use of one horse cars, when,

On motion of Ald. STRONG, the whole matter was recommitted with instructions to the comittee to report against the prayer of the petitioners.

From the Committee on Public Lands, &c.—Favorably on the petition of John Anglim to have his salary as keeper of the Hamilton avenue bridge to $500 per annum.

Ald. STANBURY moved that it be fixed at $300. Lost.

Ald. SCHOLES moved that it be fixed at $350. Lost.

Ald. M'NAMEE moved a reconsideration of the vote just taken. Lost.

From the same Committee—on the subject of public markets—recommending their establishment. While the committee are not prepared to point out any particular portion of the city as the proper place for the establishment of a market, yet they were unanimously of opinion that an application should be made to the Legislature for the passage of an act giving to the Common Council power to purchase lands for market purposes, and presenting the draft of an act to be submitted to the Legislature.

Laid on the table for one week.

A communication was received from the commissioners on Williamsburgh claims, representing that bonds to the amount of $39,408, were required to be issued to settle the claims against the City of Williamsburgh, of John Cassidy.

In connection, a resolution was issued authorizing the issue by the comptroller of said bond.

On motion of Ald. STRONG, the further consideration of this subject was postponed for one week.

The Board then adjourned.

Ald. DOUGLASS thought it a perfect farce to style it the greatest pumping engine in the world. The Cornish engine at Belleville was a better and more economical one. and he had heard of one in Europe which would perform a great deal more work on a less amount of coal. He denied that the experiments which had been made showed the engine to be what was required by the contract. He did not wish to assail the engineers concerned, but he did not believe they proceeded on the right data. Let them take the test of duty and capacity together, and they would get at what the contract called for. It behoved the Common Council to be careful how they gave a wholesale endorsement of this engine on the experiments which had been made. Care must be used to secure economy, or our Water Works would be a curse instead of a blessing. At present it cost for every 100 gallons used in Brooklyn, about four times as much as it did in New York—that is the actual expense of delivery. He believed an engine could be procured, which would greatly lessen this cost. Let us try this engine a little, and see how it works. If one of the buckets should fail to dip, he was assured by an eminent engineer, out would go one of the cylinder heads, and the engine is stopped. Where would we be then for our water supply? Such an accident had happened since this engine had been in operation. It had already cost a heavy bill of expense to keep in repair. Addition upon addition and alteration after alteration had been made before it was got in shape. It worked very pretty the other day, it was true, but this was not the time unqualifiedly to endorse it.

Ald. SCHOLES moved that the report of the Commissioners be accepted and placed on file. They were not called upon to endorse the action of the Commissioners, nor was it proper to call upon them to have built another engine like this. When the Commissioners were assailed here, he had, as he thought it his duty to do so, defended them, and for the same reason he believed it was wrong to endorse them now. It took some six months trial of it before they were satisfied with the engine, and why should the Board, after an examination of it for only a few hours, be called upon, not only to endorse but to ask for the building of another like it. It was enough to order the document on file, and there was no need of going further.

Ald. DAYTON desired to go further than that—though he was aware that all this Board would say or do, could not be considered as obligatory on the Commissioners. They were city officers and had a right to accept or reject this engine and therefore so far as that was concerned this whole thing was settled. The gentleman from the Nineteenth Ward had said that when the Commissioners were assailed he had felt it to be his duty to defend them, and when praised from his present conduct, the inference is that he feels it also his duty to condemn them. [a laugh.] That was universally his course in the Board. He never was on the right but always on the *off* side. But he (Ald. D.) did not conceive they were assailing or endorsing the commissioners by the adoption of the recommendation. Perhaps they might have been wrong heretofore, and it was necessary to give them a guide to go by, in the future. They might be induced to attempt another fly engine as they had done before, and then after throwing away $7,000 upon it, reject it and adopt this one. Even our President the other day was so delighted that he almost lost his balance, and in looking at this noble engine, almost forgot the Reservoir on the hill back of it, which is an eternal disgrace to the city. All agreed, he thought, that they had an engine which was a pride to the city, and he believed the Commissioners, independent of the Board as they were, would like to have a vote from it on this subject as a sort of guide for the future. Without any disrespect to them, he did not think they had the most unlimited confidence themselves in their own judgment, as was indicated by their vascillating course. Ald. D thought that not only would it be necessary to have another engine to guard against accidents but also soon to lay another three feet main from the Reservoir to the city. If any accident should occur to the present main away goes the water supply for the whole city, Ald. D, ridiculed the idea that the cost of delivering the water in Brooklyn was greater than in New York. The interest on the capital alone in the latter case was more than double the amount.

Ald. DOUGLASS, said that he held in his hand a document from one of the first engineers in the United States. 235

The Fairmount Water Works—More Improvements.—The old wooden steps that have, for so many years, afforded the means of reaching the top of the Reservoir at Fairmount, are becoming very dilapidated, and will, in a short time, be removed. Instead of re constructing the steps, the Chief Engineer intends making three inclined planes, or walks, on the side of the hill, to reach the same spot. They will be eight feet wide, and at no point will the incline be more than ten degrees. One of these paths will start near the main entrance, on Callowhill street, crossing a ravine in the rocks by a bridge. The other will start from a point near the present location of the wooden steps, and the third will commence at the head gates and pass the quarry, from which the stone has been taken for constructing the wheelhouse. The embankment is admirably situated for the construction of these planes, and the views of the Schuylkill and surrounding country will be of a delightful and romantic character.

The massive iron gates at the mound dam, which are to admit water into the new wheelhouse now being constructed, have all been put in their proper places. There are three double gates of cast iron, faced with brass; each opening will be 15 feet broad, and 4 feet below the top of the dam. The mill house on the south side of the mound dam, in which the Turbine wheels are to operate, will be larger than was at first intended, 30 feet having been added to the 60 proposed in the original plan; this will allow for three wheels of 125 horse power each and six pumps 18 inches in diameter and 6 feet stroke, instead of two. The combined pumping capacity of the three wheels will, it is estimated, be greater than that of the nine wheels and pumps in the old mill-house and will more than double the capacity of the Fairmount Works. So far $20,-99217 have been expended upon this work, and an additional appropriation of $20,000 is required to complete it. 238

The rivalry among the inventors of turbine wheels to secure the success of their particular invention has been quite animated, and highly interesting to these who have watched the experiments made at Fairmount under the supervision of the Chief Engineer and a Committee of Council. These experiments, with model wheels, commenced in October last, and at that time there were but two or three models entered for competition; but new turbine wheels, to the number of a dozen have since been brought to the city, and consequently the experiments have been continued up to the present time, and will so continue until the close of the present month, when a report of the merits of each wheel will be submitted to Councils. The Chief Engineer of the Water Works recommends the abandonment of the Works on the Delaware River, in Kensington, and the erection of an additional Cornish Engine at the Schuylkill works, formerly belonging to the District of Spring Garden, the cost of which, with an additional pumping main from the engine to the reservoir, would be but $60,000. It is also suggested that a thirty inch main should be laid from the Corinthian Avenue reservoir, to Girard avenue, and to Broad st., and out Broad to Columbia avenue, and a twenty inch main along Columbia avenue to Sixth street, thence to Norris, and along Norris to Germantown avenue, and there connect with the eighteen inch main leading from the Kensington reservoir. By this means many manufacturing establishments along this route would be enabled to obtain a full supply of water.

The main sewer now being constructed by the city along Pennsylvania avenue will be so far completed in a short time as to cut off nearly all of the sewers now emptying into Fairmount dam. When this work is finished, all the drainage now flowing from the prison and other public institutions into the forebay will be deposited below the dam, and thus remove a nuisance which has long been complained of. Wedy. 18th Feby/60

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this evening, ... Hotel.

Ledger 19th Feby/64

The Alteration of the Breast Wheels at Fairmount to Turbines.—The Chief Engineer of the Waterworks gives the following reasons why the breast wheels at Fairmount cannot be altered into turbines until the completion of the new mill house. He says, "the construction of a coffer dam would be necessary, and the rocks upon which the old mill house stands would have to be blasted to the depth of eleven feet below the present floor, to accommodate the turbines; this, it was thought, would destroy a part of the building, and, of necessity, stop a number of the wheels, thus rendering it impossible to keep up a water supply. After turbines were placed in the old mill house, it would still be necessary to construct the new one, if the city wished to enjoy the whole of the water power of the river, which it purchased at so great a price. The question, therefore, was, whether the city would run the risk of altering the old works first, and afterwards erect the new works; or whether, by first erecting the new and getting them into successful operation, it would insure a full supply of water under any and all circumstances that might arise in attempting the remodelling of the old works. When this alteration is made, it will be found expedient, if not absolutely necessary, to take down the western hall of the building, before the blasting for the wheel pits. Wheels of sufficient capacity to absorb the entire water power of the river, if erected in the old mill-house, could not be supplied with sufficient water through the head arches as they are at present, as they do not furnish sufficient area of water way. To enlarge the water way, it would be necessary to stop all the wheels in the works, which would deprive a large part of the city of water while the enlargement was in progress. 237

LOCAL AFFAIRS.

The Cost of Pumping Water.—From a report made by the Chief Engineer of the Water Department, we learn the following facts as to the cost of pumping water at the various works belonging to the city. The Fairmount Water Works, it seems, pumped 224,766,611 gallons more in 861 than during the previous year. The cost for pumping at these works was $1 66 per million gallons, without including interest on the cost of the works. The cost of raising water per million gallons one foot high was 1 6.10 cents.

The Schuylkill works, which are run by steam power, show a much higher cost for pumping, the expense for each million of gallons being $8 52, and 7 4.10 for raising a million of gallons one foot high.

The cost at the Delaware Steam Works, was $13 69 per million gallons pumped into the reservoir, and 12 2-10 cts. raising it one foot high The cost per million gallons at the Twenty-fourth Ward Works was $18 99.

As to the reservoirs connected with the Spring Garden Works, it is stated that their capacity is entirely too limited, being less than the amount pumped into, and supplied from them, in a single day in summer. The depth of water in the reservoirs, when full, is 17 feet.

BER 15, 1860.

[For the Public Ledger.]

Turbine Wheels.

MESSRS EDITORS:—That the readers of the Ledger may not be misled by ex parte statements, allow me to publish some extracts from the report of the Chief Engineer, and also from the statement of the Chairman of the Committee, O. H. P. Parker, both of whom gave close attention to the experiments in testing the wheels at Fairmount.

The Chief Engineer says in his report to the Committee, "The majority of the wheels worked very satisfactoriry, and the makers of them were mechanics of more than ordinary ability. It is believed that no country could produce from the same number of wheels, promiscuously collected, as satisfactory a series of experiments."

"*The best result was procured from the Jouval wheel, made by J. E. Stevenson of Patterson, New Jersey, which gave an actual useful effect of the power employed of nearly ninety-one per cent.*

Now, what does the chairman of the committee say?—"Although the result was not as I had anticipated, yet I am perfectly satisfied, and am just as well pleased as though my particular favorite wheel had come out best, for I now know which wheel will give the best percentage of the power, and which turbine is the proper one for a particular place and a particular business." "The owner of every wheel had every facility offered him, and every liberty to test his wheel so as to produce the best result it was possible or capable of giving." Mr. J. E. Stevenson's wheel did give the best result on every trial. The first one gave a percentage of the power of the water used of 73 37-100 per cent., *which was the best of all other wheels on the first series of tests.*" "Mr. J. E. Stevenson is an able mechanic, and I think he understands the Jouval turbine better than almost any other builder in this country."

"All of the competitors did understand that the wheel giving the best percentage of power, all other things equal, should be entitled to the contract."

"*If the Jouval turbine, working on a vertical shaft, is to be adopted, then Mr. J. E Stevenson is fairly and honestly entitled to receive the contract.*" Here is the testimony of a practical wheel builder of twenty-five years, who unquestionably knew more about water wheels of all descriptions than any other man connected with the Water Department. He was disappointed in the results, being firmly of the opinion that the Parker wheel would have come out the best. But, like an honest man, he acknowledges that his wheel was beaten.

In the table accompanying the report of the Chief Engineer, the ratio given by J. E Stevenson's wheel is set down at .8777; Geyelin's is set down at .8210. The Chief Engineer, in his report, adds three per cent. for friction—thus making Stevenson's wheel give, as he says, an actual useful effect of the power employed of *nearly ninety one per cent.* In his report of 1859, he says that the "cost of raising one million of gallons of water into the reservoir is $14 66, or 15 27-100 cents per million gallons raised one foot high." The 6¼ per cent. advantage of Stevenson's wheel would save the city upwards of $5000 per annum

WM. NEAL.

Water Department and the Unemployed Poor.

7/18/61

[For The Press.]

The Councils are now considering the propriety of making extravagant appropriations to several of the Departments of the city (but particularly to the Water Department,) under the specious pretence of giving employment to the poor workingmen of our city.

I make use of the term "specious pretence" from a knowledge of the fact, that within a few days a contract for the pumps to be erected at Fairmount, involving an expenditure of some eighteen or twenty thousand dollars, has been given to a firm in the State of Delaware; thus not only depriving our *poor machinists* of the work, but sending it to another State, which contains many disloyal citizens.

Councils should be cautious to whom the expenditure of such large amounts of money are entrusted. The present chief of the Water Department has been in office three years, yet no one of the several works undertaken by him has been finished. In all cases the estimates have been exceeded to a fearful extent. The mill-house at Fairmount may be cited as one of many instances, the figures of the estimate for the work having actually been reversed, the amount appropriated for that object to the present time being $71,000 instead of $17,000, (the sum estimated,) and the works still unfinished. Such enormous discrepancy really appears incredible, yet an inspection of the published records of Councils for the past three years will show it to be the fact. Is it safe to entrust to parties capable of making such gross errors the expenditure of the amount proposed to be appropriated to the Water Department—namely, $441,500? At the same rate of increase as in the case above cited, this sum would reach $1,841,055 before the work proposed was completed.

In the cities of New York, Boston, Brooklyn, Baltimore, Montreal, Hamilton, and others, the consultation and advice of several eminent civil engineers was obtained, and much time consumed in considering the different plans proposed, before entering into a work of such magnitude and vital importance to the citizens as that of its permanent water supply.

Ought not Councils (who, not being experts, are unable to decide upon the various plans proposed) to call in competent aid, and not depend entirely upon the opinions of one whose crude and visionary plans, as now published, are in direct conflict with those put forth in his previous documents? CAUTION.

DEPARTMENT OF WATER.

General Appropriation.

An Ordinance to make an Appropriation to the Department of Water, for the year 1860. Appropriation approved February 10th, 1860, $194,050 00

October 2d, " 8,000 00

202,050 00

Item.		Amount Appropriated.	Warrants Counter-signed.	Balances which Merge.
1.	Salary of Chief Engineer,	2,500 00	2,500 00	
2.	" Register,	1,800 00	1,800 00	
3.	" Chief Clerk and five Permit Clerks,	5,250 00	5,119 24	130 76
4.	" Four Inspectors,	2,400 00	2,400 00	
5.	" Four Purveyors and one Messenger,	3,100 00	3,100 00	
6.	Extra Clerk Hire,	2,000 00	1,997 30	2 70
7.	Salary of Clerk and Draughtsman at Engineer's Office,	1,600 00	1,586 93	13 07
8.	Books, Stationery, Advertising, Printing, Posting, &c.,	1,500 00	1,469 18	30 82
9.	Fuel for Offices, Ground Rents, Cleaning and Incidentals,	900 00	551 21	348 79
10.	Carriage Hire,	100 00	42 50	57 50
11.	Salary of two Engineers at Fairmount Works,	1,500 00	1,500 00	
12.	" one Assistant Engineer " "	400 00	381 68	18 32
13.	" one Watchman " "	400 00	400 00	
14.	" two Engineers at Delaware Works,	1,600 00	1,600 00	
15.	" four Firemen " "	1,800 00	1,800 00	
16.	" two Watchmen " "	1,000 00	985 60	14 40
17.	" two Engineers at Schuylkill Works, including houses,	1,400 00	1,400 00	
18.	" two Assistant Engineers at Schuylkill Works,	900 00	900 00	
19.	" ten Firemen at Schuylkill Works,	4,500 00	4,469 12	30 88
20.	" one Watchman " "	400 00	400 00	
21.	" two Engineers and ten Firemen at the Twenty-fourth Ward Works,	2,500 00	2,500 00	
22.	Coal for Fairmount Works,	200 00	198 45	1 55
23.	Coal for Delaware Works,	8,000 00	5 332 80	2,667 20
24.	Do Schuylkill Works,	14,000 00	12,753 35	1,246 65
25.	Do Twenty-fouth Ward Works,	3,000 00	2,611 53	388 47
26.	Purchase of Wood for all the Works,	250 00	132 25	117 75
27.	Tallow, Oil and Gas for Fairmount Works,	500 00	470 42	29 58
28.	Tallow, Oil and Fluid for Delaware Works,	400 00	192 75	207 25

The Philadelphia Inquirer.

PHILADELPHIA, MONDAY, NOV. 5.

Supply of Water to American Cities.

The following table exhibits the cost of water works and the daily supply, in different cities of the Union:—

City Supplied.	Cost of Works.	Daily Supply gallons.	Extent of Pipe.
Philadelphia	$3,900,000	19,638,442	306½m.
New York	23 000,000	30,000 000	263
Boston	5,574,323	15,000,000	130
Pittsburg	700,000	4,075,755	26¾
Brooklyn	4,800,000	10,000,000	170
Albany	1,074,790	2,500,000	46
Hartford	427,587	785,338	26
Jersey City	973,326	2,000,000	28¾
Buffalo	530,000	3,000,000	32
Cleveland	550,000	1,000,000	22
Detroit	829,925	2,142,774	61
Chicago	1,014,146	3,000 000	72½
Cincinnati	1,359,500	4,618,567	76
New Orleans	1,000,000	6,000,000	55
Troy	205,000	....	..
Utica	75,000	800,000	10
Rockland	50,000	....	20
Cambridge	300,000	400,000	16
Plymouth	82,000	60,000	11
Bridgeport	115,000	400,000	15
New Britain	50,000	300,000	10
Malone	12,000	30,000	5½
Watertown	50,000	....	9
Elizabethtown	109,628	500,000	7
Trenton	117,000	....	10¼
Scranton	100 000	75,000	9¾
Washington	5,000,000	67,000,000	..
Rochester	....	2.000,000.	50

Table showing the Ratio of the Income of Water Works to the population of the various Cities supplied.

Cities.	Population.	Receipts.	per head.
Philadelphia	600,000	$551,180	$ 91
New York	934,000	800,219	85
Boston	180,000	316,290	1·75
Albany	66,350	80,517	1·21
Hartford	50,000	26,000	52
Jersey City	30,000	65,000	2·16
Buffalo	81,541	50,000	61
Cleveland	43,555	13,980	32
Detroit	70,000	57,192	81
Chicago	115,338	102,709	89
Cincinnati	180,000	184,837	1·02
New Orleans	160,000	140,000	87
Plymouth	4,500	3,700	82
Bridgeport	10,000	7,000	70
Malone	3,000	1,500	50
Watertown	6,000	3,500	58
	2,534,284	2,403,624	
2,403,624 ÷ 2,534,284=948.			
Rochester	48,096	45,595	9·48

Dead Ends—An Extensive Job for the Water Department.—On Thursday last, Councils passed a resolution authorizing the Chief Engineer of the Water Works to connect the dead ends of water pipe with pipe laid in the nearest streets, so as to keep up a continuous flow of water in the pipes. These dead ends are said to be so numerous in the old city proper, as well as in some of the old districts, that at least 100,900 feet of pipe will be required to make the necessary connections, the cost of which will amount to over $100,000. The resolution was not discussed in Councils. The Chief Engineer states that these dead ends render the water impure in the vicinity where they occur, and that it is with difficulty that the pipes are cleaned.

A Large Pond of Water—The Corinthian avenue reservoir, near Fairmount, has been so far completed as to allow of 22 feet 9 inches depth of water. When the entire work is finished, the reservoir will contain 25 feet depth of water, or 37,000,000 gallons.

June 3rd/61

The Water Works of Philadelphia.—We gave, on Saturday, the total amount of water pumped at the works in Philadelphia, and to-day we present the detailed operations of each of the works belonging to the city.

FAIRMOUNT WORKS.

for 1858

	Total Quantity Pumped each Month during the Year. Wine Gallons.	Average Quantity Pumped per Day each Month. Wine Gallons.
January,	224,267,755	7,234,443
February,	166,994,220	5,964,079
March,	222,547,810	7,178,961
April,	261,441,820	8,714,727
May,	261,558,573	8,437,373
June,	347,559,469	11,585,315
July,	366,997,070	11,838,615
August,	303,795,305	9,799,848
September,	276,821,730	9,227,391
October,	249,269,420	8,040,949
November,	199,142,750	6,638,091
December,	178,022,745	5,742,669

Total, 3,058,418,667 gallons.

Daily average, 8,379,229 gallons.

These works supply the First, Second, Third, Fourth, Fifth, Sixth, Seventh, Eighth, Ninth and Tenth Wards of the city.

SCHUYLKILL WORKS (SPRING GARDEN).

	Total Quantity Pumped each Month during the Year. Wine Gallons.	Average Quantity Pumped per Day each Month. Wine Gallons.
January,	184,123,310	5,939,461
February,	170,456,280	6,087,724
March,	176,614,360	5,697,237
April,	242,527,570	8,084,252
May,	214,190,470	6,909,370
June,	239,988,870	7,999,629
July,	286,495,830	9,241,800
August,	281,144,580	9,069,180
September,	307,919,810	10,263,993
October,	276,372,900	8,915,254
November,	233,923,080	7,797,436
December,	205,884,932	6,641,449

Total, 2,819,641,992 gallons.

Daily average, 7,725,044 gallons.

These works supply the Eleventh, Twelfth, Thirteenth, Fourteenth, Fifteenth and Twentieth Wards of the city.

DELAWARE WORKS, KENSINGTON.

	Total Quantity Pumped each Month during the Year. Wine Gallons.	Average Quantity Pumped per Day each Month. Wine Gallons.
January,	50,389,360	1,625,463
February,	32,739,000	1,169,250
March,	60,161,976	1,940,708
April,	60,041,422	2,001,380
May,	62,652,576	2,021,050
June,	76,998,824	2,566,627
July,	79,838,980	2,575,451
August,	81,649,028	2,633,839
September,	66,770,010	2,225,667
October,	66,355,050	2,140,485
November,	60,659,202	2,021,937
December,	58,932,262	1,901,040

Total, 757,187,690 gallons.

Daily Average, 2,074,486 gallons.

These Works supply the Sixteenth, Seventeenth, Eighteenth, Nineteenth, and part of the Twenty-third Wards of the city.

TWENTY-FOURTH WARD WORKS.

	Total Quantity Pumped each Month during the Year. Wine Gallons.	Average Quantity Pumped per Day each Month. Wine Gallons.
January,	10,033,278	323,654
February,	9,390,600	335,378
March,	11,009,186	355,135
April,	10,473,950	349,131
May,	11,844,940	382,095
June,	17,163,366	572,112
July,	18,749,710	604,829
August,	14,549,920	469,352
September,	30,025,292	1,000,843
October,	30,088,460	970,496
November,	20,061,104	668,703
December,	20,717,818	670,574

Total, 204,177,624 gallons.

Daily Average, 559,390 gallons.

For the supply of the Twenty-fourth Ward.

Statistics of the Philadelphia Gas Works.—We give below some interesting statistics, showing the operations of the Philadelphia Gas Works for the year 1858:

Whole quantity of gas made during the year,	cubic feet,	480,459,000
Maximum daily consumption,	"	2,368,000
Whole length of street mains, miles,		255
" No. of services and meters, feet,		28,965
" No. of lights supplied with gas,		388,000

The City Gas Trust now embraces the pipes and works of the old city, the former districts of Spring Garden and Penn, and Moyamensing, the late Boroughs of West Philadelphia and Frankford, and those of the gas companies of Germantown, Richmond and Southwark; leaving outside only the works and pipes belonging to the Northern Liberties and Manyunk gas companies. The latter is expected to be placed in the Trust

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Operations of the Water Department.—From the annexed tables, it will be seen that the largest amount of water pumped during any month of the year, at the Fairmount Works, was in October, when it reached 405,405,000 gallons; the average number of gallons pumped each day in the same month was 13 077,580. The average of the month of February was but 5,894,676. At the Schuylkill Works, the number of gallons pumped in September was 304,621,020; in the same month the average per day was 10,154,034. At the Delaware Works, the number of gallons pumped in July was 98,224,970; average per day of same month, 3,676,250 The amount pumped at the West Philadelphia Works in August was 28,825,710 gallons; average each day in same month, 929,861. The number of gallons pumped at all the works in August was 795,255,270; in January, 429,751,712; a difference of 365,503,558.

The following tables exhibit the amount of water supplied by the different works each month during the year:

FAIRMOUNT WORKS.

	Number of gallons pumped each month during the year.	Average No. of gallons pumped per day each month.
January,	188,502,642	6,080,730
February,	165,050,915	5,894,676
March,	187,190,290	6,038,396
April,	209,047,535	6,968,251
May,	268,463,285	8,660,106
June,	255,992,090	8,533,069
July,	379,522,500	12,242,661
August,	372,270,000	12,008,709
September,	267,997,500	8,933,250
October,	405,405,000	13,077,580
November,	359,995,000	11,999,833
December,	330,835,000	10,672,096
Total,	3,390,271,757	9,288,415

SCHUYLKILL WORKS.

	Number of gallons pumped each month during the year.	Average No. of gallons pumped per day each month.
January,	166,844,810	5,382,091
February,	152,379,810	5,442,136
March,	174,383,460	5,625 269
April,	168 816,200	5,627,206
May,	207,162 360	6,682 657
June,	213 851,470	7,128,382
July,	260,593 170	8,406,231
August,	299 787,040	9 670,550
September,	304,621,020	10,154,034
October,	267,765.320	8,637,591
November,	226,409,980	7,546,999
December,	201,122.380	6,487,818
Total,	2,643,736,620	7,243,114

DELAWARE WORKS.

	Number of gallons pumped each month during the year.	Average No. of gallons pumped per day each month.
January,	54,792 360	1,767,495
February,	53,339,356	1,904,977
March,	55,397,440	1,787,014
April,	58,344,624	1,944,820
May,	80,498,400	2,596,722
June,	80,287,520	2,676,250
July,	98,224,970	3,168,548
August,	94,372,520	3,044,275
September,	81,993,600	2,733,120
October,	81,574,060	2,631,421
November,	77,995,270	2,599,842
December,	51,746,980	1,669,257
Total,	868,567,100	2,379,635

TWENTY-FOURTH WARD WORKS.

	Number of gallons pumped each month during the year.	Average No. of gallons pumped per day each month.
January,	19,611 900	632,642
February,	17,653,230	630,472
March,	22,118,580	713 502
April,	18,896 580	629,886
May,	22,093 200	712,684
June,	20,877,600	695,920
July,	25,556,220	824,394
August,	28,825,710	929,861
September,	25,683,750	856,125
October,	23,185,530	747,920
November,	20,767,500	692,250
December,	20,186,370	651,173
Total,	265,456,170	727,277

The following shows the amount of water supplied by all the works:

	Number of gallons pumped each month during the year.	Average No. of gallons pumped per day each month.
January,	429,751,712	13,862,958
February,	388,423,311	13,872,261
March,	439,089,370	14,164,173
April,	455,104,939	15,170,164
May,	578,217,245	18,652,169
June,	571 008,680	19,033,621
July,	763 896,860	24,641,834
August,	795,255,270	25,633,395
September,	680,295,870	22,676 529
October,	777,929,910	25,094,513
November,	685,167,750	22,838,925
December,	603,890,730	19,544,862
Total,	7,168,031,640	19,638,442

During the year 1858, the total amount of gallons pumped was 6,839,425,979, or 328,605,661 less than in 1859. The daily average in 1858 was 18,738,153 gallons

The Alteration of the Breast Wheels at Fairmount to Turbines.—The Chief Engineer of the Waterworks gives the following reasons why the breast wheels at Fairmount cannot be altered into turbines until the completion of the new mill house. He says, "the construction of a coffer dam would be necessary, and the rocks upon which the old mill house stands would have to be blasted to the depth of eleven feet below the present floor, to accommodate the turbines; this, it was thought, would destroy a part of the building, and, of necessity, stop a number of the wheels, thus rendering it impossible to keep up a water supply. After turbines were placed in the old mill house, it would still be necessary to construct the new one, if the city wished to enjoy the whole of the water power of the river, which it purchased at so great a price. The question, therefore, was, whether the city would run the risk of altering the old works first, and afterwards erect the new works; or whether, by first erecting the new and getting them into successful operation, it would insure a full supply of water under any and all circumstances that might arise in attempting the remodelling of the old works. When this alteration is made, it will be found expedient, if not absolutely necessary, to take down the western hall of the building, before the blasting for the wheel pits. Wheels of sufficient capacity to absorb the entire water power of the river, if erected in the old mill-house, could not be supplied with sufficient water through the head arches as they are at present, as they do not furnish sufficient area of water way. To enlarge the water way, it would be necessary to stop all the wheels in the works, which would deprive a large part of the city of water while the enlargement was in progress.

142

The Philadelphia and New York Water Works.—The water works of Philadelphia now supply about 65,000 water renters, at $2 50 each, and upwards, according to the number of openings in the pipes. The entire receipts into the department, for water and pipe, amount to about $550,000 annually, giving a net income to the city of nearly $200,000. In New York there are but 50,000 water takers, and they have to pay, exclusive of water pipe, which is paid for out of a loan, $750,000 annually, the rents being $10 and upwards. With this large revenue, there is every year a large deficiency. Though the works of Philadelphia are very complete, the rapid spread of the city, and the continual erection of new buildings in the outer wards, has tested their capacity to the utmost in warm weather to supply this increased demand. Councils, in examining into the subject, concluded to enlarge the works at Fairmount, by the erection of a new mill-house, of sufficient capacity to contain three of the largest sized turbine wheels, by which the power at Fairmount would be doubled, and for years prevent any scarcity in the supply of water. The work was commenced and the foundations for the building completed; but in doing this the appropriation made for the work was exhausted, and now Councils are asked to pass a loan bill of over $40,000 to finish the job. The bill was before Councils on Thursday last, but it being evident that a two third vote could not be obtained at that time in its favor, the further consideration of it was postponed until Thursday next. The friends of the measure advocate the passage of the ordinance, on the ground that the demand for water in the future will be so great that these wheels will be necessary to keep up a supply, and also that the city will lose money by allowing the work to remain in its present unfinished state. 357

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ment countenance an invitation for competing propositions? Yet we find Mr. Neal moving this resolution to invite them. How could he be so forgetful of his obligations to Mr. S, or with what justice could they ask an estimate from other parties. In the first case, it was unfair to Mr. S., and fraudulent to other parties; and all the odium and obliquity, if there be any, lies upon our present Chairman and his friends. Another fact I feel it my duty to proclaim to the public, relative to the course of our chairman and his coadjutors. After the award and contract was made and sanctioned by C. E. Committee and Law Department, they endeavored to annul our action by Council, and failing in that, the Mayor was appealed to, and plyed with folios of written argument, as well as any amount of oral efforts, to show how the interests of the city were disregarded, and was induced to withhold the seal and his signature for some time, and did not give it the proper form until suggestions of his were incorporated into the contract, which ought not to have been admitted nor sanctioned by the Committee. All this made a delay of some six weeks of the very best of the season for doing the work, which will greatly increase the cost and risk. The chairman and his friends occasioned this delay by a factious opposition, and are answerable alone for the consequences

In an investigation by a sub-committee, it was found that Mr. S. had never built a pumping wheel of any kind, and only three small ones on the plan of his model, nor any of any kind over sixty horse power. He was totally without experience, and could show no practical results. The only argument that could be advanced in his favor was, the 6½ per cent. in a little model wheel of 1½ horse power, and competent and experienced engineers questioned whether his model could be extended to the working proportions of a 125 horse power wheel, and give the per cent. claimed for it by the chairman and his coadjutors. We are without practical illustration or proof, and therefore have a clear right to deny that he can do it.

On the other hand, our present contractor pointed to Fairmount for a practical result. There was a Jouval Turbine wheel erected by him, that had been built under very unfavorable circumstances; that had been in operation some ten years, nine of which it had run without a dollar of expense for repairs, performing in a manner that was highly creditable to Mr. Geyeline, and entirely satisfactory to the Department. At Nashua, Cohoes, Patterson, Trenton, at Brandywine, and at various other places were Turbine Wheels of his construction, the results of which were all that he promised, and the testimonials of their performances were of the most flattering character. On the one hand, we had ocular demonstration of the skill and genius of our contractor, and the endorsement of hydraulic engineers of great experience—not of 1½-horse models, but of wheels from 50 to 200 horse power. The evidence of competency and such endorsements, and the best investigation we could give the subject, and at some $6000 less cost than Mr. S.'s proposition, and some $3000 with contingencies they could not estimate, of Hunsworth, Eakins & Co., which in all probability, would have made it equal to Mr. S.'s first bid, left us no alternative but to award the contract to our contractor. And here let me state that Mr. S. made a proposition to our Chief Engineer and withdrew it, and it never was placed before the present Committee. Some time in May last, Hunsworth, Eakins & Co., endorsed by Mr. S., made a proposition—not to the head of the Department, where it could only be legally received—but to Mr. Neal, and he put it in his pocket, and there it remained till presented for the action of the Watering Committee. It ought to have been indignantly kicked under the table; and with the experience now of the Committee, that would be its fate. The chairman knew he was violating the consolidation act which prohibits members of Council from performing any executive duty whatever. There never was a proposition of Mr. S. legitimally before us, and his claim is without a shadow of foundation.

A word on the subject of model experiments. A small portion are reliable, as all experienced engineers and mechanics, well know. I have seen models that performed all their most sanguine friends expected, when extended to practical working proportions were entire failures. The Caloric engine is a striking example. Up to ten horse power it is admirable, yet the expenditure of thousands has failed to extend it to large working proportions. So with the magnetic locomotive. In miniature it was every thing that could be desired, but practically useless. I could cite other examples, but enough has been done to illustrate the great uncertainty of models. With this kind of uncertain data, a calculation is given to show the great advantages of Mr. S.'s wheel over our contractors. They assume five billions and nearly a half of gallons to be the capacity of the six new pumps. The C E estimates their practical working power at three and a half billions gallons, or about equal to the present pumping capacity. They claim six and a half per cent. in their wheel over our contractors. When the question was asked by a member of the former watering committee, what would be the difference in pumping capacity of the three best wheels, the Chief Engineer replied not one per cent; the millwright of twenty years experience was present, and responded, not one per cent. in the four best wheels, which included one in which he was interested. No member of that committee questioned or denied these opinions, not even the millwright, all acquiesced.

The cost of pumping for 1859 was 1.71 cents per million gallons, (see Engineer's report of Fairmount Works,) exclusive of interest on cost of works. They assume $14 66 as the cost of pumping a million gallons of water at Fairmount, which was the cost of pumping, including interest on cost of works, in 1858. The interest on cost of works has nothing to do with the matter of pumping and it ought not to be estimated when the merits of wheel builders are considered. It is the cost of pumping alone that is germain to the subject. But, for the argument, we will concede the one per cent. advantage to Mr. S's wheel and it will be found Mr. S's wheel will pump thirty five millions more per annum, which, at 1.71 cents, is $59 85 Our contractor's wheels cost $3100, with contingencies for which they could not estimate, and which may be one, two, or three thousand dollars. Take the lowest, and we have the wheels from our contractor at $4100 less cost, showing a clear gain to the city of some $[illegible]10 per year.

But we do not concede one per cent., and defy them to show any such practical results.

Mr. S.'s model wheel could not have been extended to the working proportions contemplated, without an extension of room and building that would have cost thousands of dollars, in addition to his bids and contingencies, and till it was done and tested, there was no security that a result would be produced equal to our contractor's; and these were some reasons that were entitled to serious consideration that the result would be greatly less. Our contractor could point to practical results of large wheels of 84 per ct. co efficient, and bring the most respectable testimony to substantiate the fact, while Mr. S. and his advocates could only show a model experiment to stand upon, and base all their calculations of one and a half horse power. To have awarded the contract, under these circumstances, to Mr. S, would have been disregarding the light of experience, the best interests of the city, violating our obligations of fidelity, and doing manifest injustice to a man that the city is under obligations for introducing the best wheel now at Fairmount.

The only advantage that the city has derived from those model experiments has been, that it has proved, beyond a doubt, that of all the wheels now known, none are so well adapted to our Fairmount works, with its varying head, as the vertical Jouval Turbine Wheel, similar to the one which has been in operation some ten years at Fairmount.

To sum up, the allegation of Mr. Neal that the contract was given to Mr. Geyelin, whose wheel was the second best, is not verified; that the faith of the city was pledged to the party producing the greatest per centage of power, is unsustained by a particle of evidence; that the allegation of the millwright is not substantiated, wherein he says that Mr. S.'s wheel produced the best results on every trial. We have demonstrated, beyond a question, that the interests of the city have been properly regarded, and justice has been vindicated by awarding the contract to Mr Geyelin. We have shown that the minority, by a factious opposition, has delayed the work some six weeks, increasing the cost and risk; that their calculations, showing the great advantage to the city, are based a 1½ horse model experiment, which has never been practically shown, and which we defy them to show; that the chairman has violated the act of consolidation in assuming executive duty; that he has imputed motives, and aspersed and assailed the character of the majority of both committees, and the Chief Engineer, the former and the present, that, *if true*, ought to brand them with infamy and consign them to the fate of felons, without the shade of a shadow of evidence.

For all of which we merely ask to be heard, and trust that a candid public will emphatically decide which have been most vigilant and faithful in guarding and promoting the best interests of our noble water works—the majority or the minority.

M. R. MOORE.

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WATER.

General Appropriation.

An Ordinance to make an appropriation to the Department of Water for the year 1861, approved March 2, 1861, $180,900 00

Items.

			Amount Appropriated.	*Amount Countersigned.*	*Balances, which Merge.*
1. Salary of Chief Engineer,			2,500 00	2,500 00	
2. Salary of Register,			1,800 00	1,800 00	
3. Salary of Chief Clerk and five Permit Clerks,			5,250 00	5,214 46	35 54
4. Salary of four Inspectors,			2,400 00	2,400 00	
5. Salary of four Purveyors and one Messenger,			3,100 00	3,092 33	7 67
6. Extra Clerk Hire,			2,000 00	1,974 02	25 98
7. Salary of Clerk and Draughtsman at Engineer's Office,			1,600 00	1,600 00	
8. Books, Stationery, Advertising, Printing, Posting, &c.,			1,700 00	1,686 60	13 40
9. Fuel for Offices, Ground Rents, Cleaning, Offices and Incidentals,			900 00	853 60	46 40
10. Carriage Hire,			100 00	63 00	37 00
11. Salaries of two Engineers at Fairmount Works,			1,500 00	1,500 00	
12. Salary of one Assistant Engineer at Fairmount Works,			400 00	400 00	
13. Salary of one Watchman at Fairmount Works,			400 00	99 99	300 01
14. Salaries of two Engineers at Delaware Works,			1,600 00	1,600 00	
15. Salaries of four Firemen at Delaware Works,			1,800 00	1,800 00	
16. Salaries of two Watchmen at Delaware Works,			1,000 00	999 30	70
17. Salaries of two Engineers at Schuylkill Works, including Houses,			1,400 00	1 400 00	
18. Salaries of two Assistant Engineers at Schuylkill Works,			900 00	900 00	
19. Salaries of ten Firemen at Schuylkill Works,			4,500 00	4,370 17	129 83
20. Salary of one Watchman at Schuylkill Works,			400 00	400 00	
21. Salaries of two Engineers and two Watchmen at the Twenty-fourth Ward Works,			2,500 00	2,500 00	
22. Purchase of Coal for Fairmount Works,			300 00	274 84	25 16
23. Purchase of Coal for Delaware Works,			8,000 00	7 986 98	13 02
24. Purchase of Coal for Schuylkill Works,			14,000 00	13 685 70	314 30
25. Purchase of Coal for Twenty-fourth Ward Works,			3,000 00	2,996 17	3 83
26. Purchase of Wood for all the Works,			250 00	40 00	210 00
27. Purchase of Tallow, Oil and Gas for Fairmount Works,			500 00	467 73	32 27
28. Purchase of Tallow, Oil and Fluid for Delaware Works,			400 00	254 47	145 53
29. Purchase of Tallow, Oil and Fluid for Schuylkill Works,			800 00	587 15	212 85
30. Purchase of Tallow, Oil and Fluid for Twenty-fourth Ward Works,			200 00	175 04	24 96
31. Purchase of Small Stores, Tools, White Lead, Gum and Hemp Packing, Emery, &c.,			1,200 00	1,198 93	1 07
32. Repairs at Fairmount Works,			3,000 00	2,999 00	1 00
33. Repairs at Delaware Works,		$1,000 00			
To transfer from item 41, per resolution September 27, 1861,		500 00	1,500 00	1,499 54	46
34. Repairs at Schuylkill Works,			2,000 00	1,863 40	136 60
35. Repairs at Twenty-fourth Ward Works,		$750 00			
To transfer from item 41, per resolution September 27, 1861,		750 00	1,500 00	1,275 73	224 27
36. Keeping Grounds in order at Fairmount,			1,200 00	989 49	210 51
37. Keeping Pipes, Plugs, Stops and Fixtures in good order,			7,500 00	7,495 86	4 14
38. Keeping Buildings, Grounds and Reservoirs in good order,		$5,000 00			
To transfer from item 39, per resolution September 27, 1861,		2,000 00	7,000 00	7,000 00	
39. Purchase of Iron Pipe, Fire Plugs, Stop-Cocks, Lead, Brass Castings, Iron Castings and other fixtures and material connected with the laying of pipe and the setting of plugs, stop-cocks, &c.,		$60,000 00			
By transfer to item 38, per resolution September 27, 1861,		2,000 00	58,000 00	43,761 37	14,238 63
40. Pay for labor—laying pipes, setting plugs, and for fitting up fire-plugs, stop-cocks, &c.,			24,000 00	21,225 86	2,774 64
41. Drilling and making new attachments,		$6,000 00			
By transfer to item 33, per resolution September 27, 1861,	$500 00				
By transfer to item 35, per resolution September 27, 1861,	750 00	1250 00	4,750 00	4,220 13	529 87
42. For the payment of the claim of the Germantown Water Company for Water for 1860,		$275 00			
And for the payment for Water to the Germantown Water Company for 1861,		275 00	550 00	550 00	
43. For Railing at Fairmount,			1,000 00	1,000 00	
44. For Paving in front of the City Property in Poplar street, west of Corinthian avenue and east of Twenty-second street,			2,500 00	2,500 00	
Total,			180,900 00	161,200 36	19,699 64

WATER LOAN.

Special Appropriations, approved April 8th, 1859, and July 18th, 1860.

1. Purchase of Iron Pipe, Branches, Stops, Lead, Gasket, &c., and to pay for labor and material connected with laying of Pipe; balance brought forward from 1860,			27 90	3 00	24 90
2. Raising the reservoir at Corinthian avenue nine feet, and building retaining walls on Corinthian avenue, Poplar and Twenty-second streets; balance brought forward from 1860,	$2,077 89				
Additional May 18, 1861,	7,000 00	$9,077 89			
By transfer to item 5, per resolution, Nov. 18, 1861,		1,200 00	7,877 89	5,415 12	2,462 77
3. Erecting two Turbine Wheels and four Pumps, including Mains, Stops, Connections, &c., at Fairmount; balance brought forward from 1860,		$29,518 45			
Additional May 18, 1861,		20,500 00	50,018 45	43,782 78	6,235 67
4. Erecting the Mill House along the Mound dam 90 feet; balance brought forward from 1860,		$15 85			
Additional May 18, 1861,		15,000 00	15,015 85	13,542 81	1,473 04
5. For laying a Main to connect the Works with the Stand Pipe; balance brought forward from 1860,		$13,000 00			
To transfer from item 2, per resolution November 18, 1861,		1200 00	14,200 00	13,598 40	601 60
Total,			87,140 09	76,342 11	10,797 98
Ordinance approved April 16, 1859, to pay bills contracted during the years 1856, 1857 and 1858. Balance brought from 1860,			130 05	9 62	120 43
Ordinance approved July 9, 1859. Public Drinking Hydrants to be erected on streets, as may be deemed expedient by the Chief Engineer and the Joint Committee of Councils: Balance brought from 1860,			842 00	473 03	368 97
Ordinance approved May 9, 1860, to pay sundry bills of 1857, 1858 and 1859, as per memorandum: Balance brought forward from 1860,			34 13		34 13
Ordinance approved May 6, 1861, to pay sundry bills of 1859 and 1860, as per memorandum,			1,048 31	1,003 25	45 06

RECAPITULATION.

Ordinance approved November 2, 1861,	180,900 00	161,200 36	19,699 64
Ordinance approved April 8, 1859, and July 18, 1860; loan,	87,140 09	76,342 11	10,797 98
Ordinance approved April 16, 1859,	130 05	9 62	120 43
Ordinance approved July 9, 1859,	842 00	473 03	368 97
Ordinance approved May 9, 1860,	34 13		34 13
Ordinance approved May 6, 1861,	1,048 31	1,003 25	45 06
Grand Total,	270,094 58	239,028 87	31,066 21

SUNDAY DISPATCH.

PHILADELPHIA, MARCH 18, 1860.

Failed.

The attempt of Mr. Birkinbine, Chief Engineer of the Water Department, to inaugurate another magnificent job, for which $350,000 was demanded to begin with, has been judiciously defeated by the Watering Committee of Councils. It was not deemed altogether prudent, in view of the approaching election, to authorize a piece of extravagance which would have told with very great effect against the party in power. The extraordinary difference between Mr. Birkinbine's cyphering a year ago, in relation to the job at Fairmount, and his estimate of the total expense *now*, would have furnished a very ugly weapon to the Democracy, by which they could prove that Birkinbine is totally unfit for his business, and that the party that sustains him in his extravagant blunders is no better than he. Whilst the Watering Committee was considering the matter, some excuses were offered for the variance between the Chief Engineer's estimate and the costly proofs of his incapacity. Thus it was said that the expense of raising the reservoir at Corinthian avenue had exceeded the estimate $19,000, because it was found that a much more expensive foundation was found to be necessary to sustain this additional weight than was at first anticipated. Precisely so! But why was there not the proper anticipation at first? Mr. Birkinbine knew exactly how high the basin was to be; he ought to have known how much pressure the increased weight of the water would cause to bear on the embankment; he ought to have known how thick the sustaining wall should be to resist that pressure.

But the fact is, that he did not know;—hence an under estimate of $19,000. This apology really amounts to this: The reason why we have made this serious blunder is because Mr. Birkinbine did not understand his business! We also have another excuse for spending $26,000 more than was the estimated cost of the new mill house and machinery at Fairmount dam: that the house has been made larger to accommodate an additional turbine wheel. How much larger? Turbines take very little space in comparison to other water wheels. How many dozen square feet will this improvement require? Then there is another apology for this increase, to wit: that the outward wall that was to have been three feet thick, has been increased to five feet in thickness. And how many more dozen perches of stone will the change make necessary? Ought these changes to cost honestly a thousand dollars? If not, as we imagine, what pretext is to be now resorted to in order to account for the increase of $26,000, wherein this estimate exceeds that of last year? There can be little doubt that in the Water Department Birkinbine is the Wrong Man in the Wrong Place. The greatest public event of his administration was his pious stoppage of the fountains from playing on Sunday. His most remarkable exploit of the internal management was his malicious and arbitrary conduct towards engineers Barry and Garrett, because they were better fitted for the situations which they filled than he was for the place that he attempts to fill.

The Water Works of Philadelphia.—We give below a table showing the total quantity of water pumped each month, during the year 1858, by all the works belonging to the city:

	Total Quantity Pumped each Month during the Year. *Wine Gallons.*	Average Quantity Pumped per Day each Month. *Wine Gallons.*
January,	468,813,703	15,123,022
February,	379,580,100	13,556,432
March,	470,333,332	15,172,043
April,	574,484,760	19,149,492
May,	550,246,559	17,749,889
June,	681,710,529	22,723,684
July,	752,081,590	21,260,690
August,	681,138,833	21,972,220
September,	681,536,824	22,717,894
October,	622,085,830	20,067,284
November,	513,786,142	17,126,204
December,	463,627,757	14,955,734

Total, 6,839,425,979 gallons.
Daily average, 18,738,153 gallons.

Commerce of Philadelphia—We give below a table exhibiting the number of foreign and coastwise vessels that arrived at this port during each month of the year 1858.

[For the Public Ledger.]

Work that is Needed—An Appeal to the Authorities.

Councils, I see, have taken the subject of "employment for labor" into consideration, by appointing a special Committee, who, I trust, will give the subject a thorough consideration, and will fully report their views on this matter. Many persons say let them shift till winter, others say they ought to go to the country. They can only shift by the humane and charitable, while the unfeeling are exempt from all burthens. And as to those who have families, it is simply absurd to tell a man and family to go to the country without means to keep him a single week. Single men without families ought to go to the country, and should be urged to do it by all means. They could and should go, and stop not till they found subsistence. There is no obligation for the authorities to find them employment, unless they have mothers, with children, who have to depend on them for support.

My plan is to ask the authorities to make a loan of a million of dollars, to be applied to the extension of the Water Works, and the grading of parks and streets, to be used under the control of Councils, under the direction of their Committees, and to be done in such manner as will afford the most general relief.

The price of a day's wages should be one dollar, taking the selling price of stock as the standard of a day's pay, with a deduction of 15 per cent., which would pay the interest and the 3-10 of 1 per cent. for two years, which would relieve the real estate for that time. All you spend for the extension of water-works would not only pay the interest, but would begin to pay the loan by the time two years rolled round, and the property would not be burthened to pay the interest.

There are three large jobs, the principal part of which are digging and shovelling, and are wanted immediately, and must be done within two years, if the authorities do their duty. First, another basin at Corinthian avenue; second, a basin in the Twenty-fourth Ward; and one in the Twenty-first Ward. No one not conversant with our water-works, knows how little storage we have—in the city, all told, it does not amount to two days' storage, and in the Twenty-fourth Ward only one-half hour's average supply. In case of fire, there is no reliability to be placed on the works. The least derangement of pumps or engines renders your whole arrangement abortive, and you have no resource but the most primitive appliances. With a basin that would hold two or three weeks' supply, your works would be reliable and efficient, and confidence would take the place of apprehension and distrust; wells would be abandoned, manufactories would multiply, and an ample return would be the result of your energy and enterprise, and you would relieve a most useful and deserving portion of your population.

Our storage-room at Fairmount could be increased several millions at a very small expense, and the moment the Chief Engineer deems it expedient, it should be done. It would increase the volume of water; and experience has shown the greater the depth of water, the better the quality. At Corinthian basin there is ample room for another basin of the same or increased capacity. Five hundred men could be set to work in ten days after the Chief Engineer had instruction to proceed, and it would add to our storage capacity very materially. The Twenty-first ward is entirely without any water facilities. A basin was strongly recommended by the sub-committee on extension, and their reasons for the establishment of works were unanswerable. The inhabitants of that section of the city have the strongest claims on your favorable consideration, and it would give a large amount of labor, and it should be at the earliest possible moment commenced, and prosecuted with vigor to its completion, and the result would be satisfactory, and would entail no burthen on the city.

The Kensington basin is entirely too low, and the storage too limited, and ought to receive the earliest attention. The consequence would be a better supply and an improved quality of water, and no burthen would be entailed on the property, but it would add largely to our receipts by a very increased sale of water. In connection with all these improvements, better and increased facilities for the distribution of water are most urgently demanded, and ought at once to be commenced and prosecuted to completion with all diligence and energy. This improvement would add immediately to our receipts, and would pay the interest on cost in six months after its consummation. This is the decided opinion of the Chief Engineer, whose opinion is entitled to great weight from his past experience.

The building of the Cornish engine at the Schuylkill Works, I regard as a most important matter for the city in case of drought or casualty to the dam at Fairmount. Until we get such an appliance, the city will always be in danger from those casualties, and a wise policy would dictate the early completion of the engines and the better protection of the city.

My purpose is, and has been, to keep an eye single to works that will make a quick return and establish a lasting benefit to the city, and relieve our laboring men from the present exigency which has overtaken them, and one, I trust, they never again will have to encounter.

A LABORER.

7/10/61

Increased Capacity of the Water Works.—The work of making two connections with the ascending main of the Kensington Water Works, has been completed, as well as some alterations to the pumping engines. These improvements have increased the capacity of the works over one million of gallons per day; the amount pumped on Monday being 3,400,000 gallons, against 2,300,000 previous to the alterations. The citizens get now, as a general thing the water taken fresh from the Delaware, instead of that which remains for several days in the reservoir.

The Late Railroad Accident.—The recent accident on the Hestonville Railroad, which resulted in the death of Nicholas Maguire, occurred in this manner: The car which ran over the child is a one horse one, and the driver, acting also as conductor, was in the act of collecting the fare when the horse knocked the child down and the cars passed over it. The horse was walking at the time up a heavy grade. 268

Blunders at Fairmount Water Works

To the Editors of the Sunday Dispatch:—In the article published in your last issue under the caption of "Management of the City Water Works," I briefly (following the line of the pipe laid) pointed out some of the defects, and how many of them could have been avoided. I now purpose to show that from the *beginning to the end* the whole of that arrangement is defective; and I defy any person outside of a lunatic asylum to compel the water from the time it leaves the mill-house to pursue a more roundabout zigzag way than that adopted. At the time that article was penned the guess work at its end—which I was almost afraid to put in print from its absurdity—I find by a recent visit that the "squinting" proves to be *fact*, for a connexion is being made to the stand-pipe, adding two more square turns for the persecuted water to take, and also many more feet to the unnecessary distance it has to go before it reaches the basin.

We have twenty-four wards represented in Councils; and is there none that will stand between the people and this wanton waste of the public money by doubling the cost, by crude arrangements, and lessening the advantages to be derived from the great expense incurred for the extension?

I have no doubt that these turbines will have ample power, with a full head of water, to force the fluid through all these obstructions; but as we cannot always have a maximum head, we will now come to the "pinch." It must be conceded that the *power of those turbines decreases as the head of water lessens*; and at the time of freshets or high tides, when the water-wheels cannot run, their power is feeble, and then the defective arrangement of pipe will destroy a large portion of their effective power, and per consequence, less water will be put in the reservoir *at the very time it is most needed*. A wise economy would be to stop this blundering at once, for the loss of the work now done would be amply repaid in a few years by demolishing the whole, and pursuing a course for the pipes which will be fully two hundred feet less distance than by the way of the Folly tower. This feasible route I shall presently make so plain that the dullest intellect may comprehend its advantages. The excrescence on the side of the mount could be completed so as not to disappoint romantic lovers who expect to "bill and coo" on its isolated top.

All who have visited Fairmount on holidays have seen the pushing and crowding of the throng of persons crossing the narrow bridge over the forebay, and the public convenience demands that this causeway should be widened; and this can be done at a small cost, as the foundation is already prepared by the stone abutments or piers of the forebay gates. Let the new arches be made several feet below the present ones, which can be done, and then be above the highest water.

Assuming this crossway to be widened to the full extent of the piers, for the benefit of visitors, let the observer stand where the present pipes leave the mill-house, and trace a line with his eye on and upward to the top of the basin, and he will find an admirable course for the three pipes; first they will pass straight in an oblique horizontal line over the crowns of the new arches, thence in a straight line up the slight angle of the mount until reaching the surface of the water in the basin, near its corner, saving two hundred feet in distance and involving only two slight curves, one at the base of the mount and the other at the point it enters, the basin wall. The radius of these curves will be so great, that the resistance will be scarcely more than if the line was perfectly straight; and the slope of the mount is such that loose rock could be placed over the trench for the pipes, and thus keep up the natural beauty of this rocky surface, when taken in contrast with the grassy, artificial slopes of the north ridge of the mount.

The advantage derived from setting the arches over the forebay lower, is, that there the pipes would be more out of the influence of frost than those now laid—a matter of much importance when we have a return of some of those old-fashioned, severe winters.

It is a singular error that most engineers have fallen into, of discharging water into reservoirs much below the water-line, thereby adding the expense for valves or gates to prevent the reflux of the water when any repairs are needed to be done to the pipes; and if the gates get out of order, then the water must be drawn from the reservoir to permit their repair.

The Turbine Water Wheels for Fairmount.—The following minute description of the new Turbine water wheels, for the new mill house, at Fairmount, will be found interesting:—The term Turbine is applied now to all water-wheels having their axes or shafts placed in a vertical position, excepting those rude wooden wheels, called flutter wheels, cheaply made and used in new countries for saw mills, when saving the water from its abundance is no object, and which have their shafts either in a vertical or horizontal position.

253

The simplest kinds of Turbines have been used in civilized and semi-civilized countries from very early dates, especially in mountain districts, and in the mountainous regions of Germany, Switzerland, France and Spain, and even those parts of northern Africa influenced by the civilization of the Moors, there might have been found specimens which although rudely constructed, from the want of the exact and powerful tools used at this day for constructing the machinery designed by the modern mechanic, yet the proper application of mechanical principles shown in their construction would receive the admiration of the modern engineer, who, from not having paid particular attention to the subject, imagines the construction of Turbines to be entirely of modern times—even in our own State, especially those parts settled by Germans, varieties may be found, that show the localities in Europe from which the early settlers brought their knowledge of this system of hydraulic motor.

The Jouval turbine, which is nearly ready for the works at Fairmount, takes the name from the fact of Jouval perfecting the proper curves for the guides and buckets, and also applying a principle not hitherto used, of suspending the moving wheel above the level of water in the tail race. This improvement, called in this country the principle of the draft-box, was also discovered about the same time, but I believe without the knowledge by either party of its invention by the other, by Mr. Zebulon Parker, who applied the principle to his "Parker Wheel." The Jouval turbine consists of a cast iron cylinder placed at the bottom of a penstock, which penstock for most falls does not require to be more than six or seven feet deep—this cylinder, which is open at the top and bottom, extends from the bottom of the penstock to the lower level of water or the level of water in the tail race, having this lower end submerged three or four inches below the surface of the water—the cylinder is contracted to a little more than the diameter of the moving wheel, (only sufficiently large to allow the wheel to revolve without touching the cylinder.) Where the moving wheel is placed, above this the cylinder is made conical, having the largest diameter at the upper part of the cylinder, the portion of the cylinder just below the moving wheel is slightly increased in diameter, and is extended down at this increased diameter to the tail race. The guide wheel consists of a rim of cast iron surrounding and cast fast to a disc of cast iron through the centre of which the upright shaft, which conveys the motion of the moving wheel to the machinery to be driven projects—the hole in the disc for the shaft to pass through being rather larger in diameter than the shaft. Around the cast iron rim the guides, of plate wrought iron, are arranged in such a manner as to guide the water properly on the buckets of the moving wheel. This whole arrangement, disc, rim and guides, which is called the stationary or guide wheel, sets, without being secured by bolts, in the conical part forming the upper portion of the cylinder. The water passes into the openings between the upper edges of the guides and passing downwards is directed on the upper portion of the buckets of the moving wheel at the proper angle for producing the best effect.

The moving wheel is also composed of a cast iron rim surrounding a disc; in the centre of the disc is a hub, through which the shaft passes, and to which shaft the disc is keyed or bolted fast. Around the rim are arranged wrought iron plate buckets of the proper curve, and surrounding the outer extremities of these buckets a wrought iron ring is shrunk, thus rendering it almost impossible to break out a bucket. The water being directed properly on these buckets by the guides above, give motion to the wheel, which carries the shaft to which it is keyed around at the proper velocity. The water, after passing through the openings of the buckets, passes into the cylinder below and is discharged from the cylinder into the tail race, around the bottom edge of the cylinder, three or four inches below the surface of the water in the tail race.

There is a variety of gates used for stopping the flow of the water through the moving wheel in this system of Turbines. The most simple kind, and that used for wheels of small diameter, being a throttle valve, placed in the cylinder, below the moving wheel; that used for larger wheels, and also a better kind of gate, is a circular cast iron piece, which slides up and down around the bottom of the cylinder, and, when completely closed, rests on a plate or ring, fastened to the bottom of the tail race. The adjustment of the openings between the upper and lower edges of the guides and buckets, the angles that the upper ends of the guides and the lower ends of the buckets make with a horizontal plane, and also the angle formed by the lower ends of guides and the upper ends of the buckets, and also the shape of the curve of both guides and buckets, are particular points about this system, depending upon principles, governing similar points in the Fourneyron system. The method, not used in the Fourneyron system, of suspending the moving wheel in the cylinder, above the surface of the water in the tail race renders the wheel easy of repair in case of accidents, as all the principal parts are made accessible by merely shutting off the water in the head race. Suspending the wheel between the two levels of water does not in the slightest degree take from its efficiency in power or speed, because the air-tight cylinder in which the wheel revolves, being carried down below the surface of the water in the tail race, gives to the wheel, in its suspended position, the same power and speed as if it were placed at the bottom of the fall. The principle which produces this effect is rather difficult to explain, but an idea of its truth, and the manner in which it is produced, may be obtained by any one who will make the following experiment: In a tub or reservoir, containing a large quantity of water, place a bucket, and after filling it, so that it will sink below the surface of the water in the tub, invert the bucket, and try to raise it from the water perpendicularly, bottom upwards. It will be found that the water will remain in the bucket, and exert a force tending to draw the bucket downward. This same force is exerted upon the water passing through the moving wheel of a Jouval Turbine, contained in an air tight cylinder—the column of water in the cylinder below the wheel drawing the water through the wheel with the same velocity as if the wheel were placed at the bottom of the fall, and was acted upon by a column of water of the same height, acting entirely from above.

In addition to the advantages of having all the working parts of the wheel easily accessible, by having the moving wheel and the step placed above the surface of water in the tail race, are those gained from water flowing on the wheel perpendicularly, and, therefore, not so much changed in direction as in the Fourneyron system. Also, the very important matter of the guides being held in the conical portion of the cylinder only by the pressure of the water upon them, and not being bolted fast. By this arrangement, if accidentally a stone or any other material is caught between the guides and the buckets of the moving wheel, the guides are raised and carried around in the conical part of the cylinder, and neither the guides or buckets are liable to be broken, but which with wheels having the guides fastened rigidly is almost sure to happen when such accidents occur.

254

In both the Fourneyron and the Jouval, and in fact almost all systems of Turbines, a cast-iron reservoir above the wheel is often substituted for the wooden forebay—sometimes covered on top, and having the water brought into it by either a cast or wrought iron, or wooden pipe, or through a mason-work flume—the Turbine shaft projecting through the top of the reservoir, and surrounded by a stuffing bore, packed so as to prevent the escape of water at this place.

The Jouval system was introduced into this country about the year 1848, by M. Emile Geyelin, who has erected quite a large number in the United States, Canada, West Indies, Mexico and South America, having them principally constructed in this neighborhood. These wheels have varied from 200 to 4 or 5 horse-power, and are driven by water-falls varying from 2 to 160 feet. A wheel erected near Saltillo, in Mexico, is interesting from the power produced by an apparently small and delicate machine. The fall is 160 feet, the two moving wheels of the double wheel, (two wheels placed on a horizontal shaft,) which give motion to the machinery of the cotton mill which they drive, are each only 11 inches diameter, and the power produced by them is 125 horse power. The turbine, now working so well at Fairmount, is also of this system, and was erected under the direction of Mr. Geyelin, in 1851. The contract for the three new wheels required for driving the six new pumps about being placed in the new mill house at Fairmount has been awarded to Mr. Geyelin, after a patient investigation by the Chief Engineer and the Watering Committee of Councils into the merits of several varieties of turbines submitted by various competitors for the work.

These three wheels are now considerably advanced towards completion, and they will be, when erected, among the most powerful and largest ever constructed.

Their principal dimensions are as follows:—The moving wheels are each 9 feet diameter, having 50 buckets; radical length of buckets 16 inches, depth of rim 12 inches. Each stationary or guide wheel contains 17 guides, depth of rim 19 inches. The cylinder surrounding each wheel is 9 feet 6 inches diameter at the increased portion below the moving wheel, and it is 7 feet 2 inches long. The moving wheels are placed in their cylinders at a height of about three feet above the surface of the water in the tail-race at low tide. The circular cast-iron gates sliding on the lower part of each cylinder, are ten feet three inches diameter, and thirty inches high, they rest on base rings of cast iron, placed at the bottom of the tail-race when the flow of water through the wheel is stopped. Above each cylinder is placed, in lieu of the forebay, a large cast-iron reservoir, twelve feet diameter, with an opening at one side of elliptical form. Each chamber or reservoir is covered by a cast iron cover, strengthened by ribs, and is thus made to carry the upper bearing of the turbine shaft and the first bearing of the counter shaft.

The water is brought from the dam to each reservoir, by a wrought-iron flume of the same section as the opening at the side of the reservoir. The transverse diameter being 12 feet 10 inches, and the conjugate 7 feet 2 inches. The gearing for conveying the motion and power

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255

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Water-Works at Flat Rock.—We understand that a strong effort will be made in Councils on Thursday, to pass an ordinance authorizing the erection of Water Works at Flat Rock, so as to supply the citizens of the Twenty-first Ward with water. The friends of the measure urge that the citizens of this Ward are entirely without a supply of water, other than that obtained from wells, and this is considered impure in consequence of the dense population within the limits of Manayunk. They are without the means of extinguishing fires. It is said that $100,000 would be ample to build works sufficient for the supply of the Ward, including engine, and reservoir at Flat Rock, and also a main extending from that point into and through Manayunk. The site proposed for the reservoir is about 1500 feet from the Schuylkill, and at an elevation of 230 feet above tide water. It is thought that these works can also supply the Twenty second Ward, whenever the population may require an increased supply over that now furnished by the private works in operation. Though Councils may reject on Thursday, the proposition of the Committee creating a loan of nearly a million of dollars for the Water, Highway, and other Departments, it is confidently asserted that the above proposition will meet with success, as the wants of the people in the Twenty-first Ward demand the improvement. There is an immense amount of valuable property in Manayunk, and the fact that the need of proper water-works may endanger it, will, no doubt, have weight with Councils when the subject comes before them.

The Water Works.—The lining of the new portions of the reservoir, at Corinthian avenue, will be completed in a few weeks. The water is kept some two feet below the new work, and a platform is floated in the reservoir for the use of the workmen laying the brick.

The foundations for the new wheel house at Fairmount are progressing quite rapidly, the steam pumps in operation keeping the coffer dam free from water. One wheel pit is now finished nearly to high water mark, and the foundation of the other two are being laid.

During the present year nearly 90,000 feet of water pipe have been laid by the Department, nearly all of which has been put down in streets, improved within the past eighteen months. The erection of new houses in the outer portions of the city keeps the Water Department busy in attending to the applications for water pipes, as the pipe has to be laid before the streets are paved.

264

Philadelphia, Wednesday, Feb. 27, 1861.

265

LOCAL AFFAIRS.

Interesting Statistics.—From an elaborate report issued yesterday by Mr. Birkinbine, Chief Engineer of the Water Works, we glean the following facts, in reference to affairs connected with the Water Department. In reference to the laying of new water pipe during 1860, it appears that the number of feet of new pipe laid amounted to 97,828 or 18.52 miles, of which, one and one-tenth per cent. is three-inch pipe. Twenty-four and nine-tenths per cent. is four inch. Sixty-six and five-tenths per cent. is six inch. One and six tenths per cent. is eight inch. Four and nine-tenths per cent. is ten inch, and one per cent. is twelve inch. The number of feet of pipe relaid was 2716; and the total number of feet of pipe laid during the year was 100,544, or 19.04 miles; of this amount 29,547 feet were laid in the First District, comprising the First, Second, Third and Fourth Wards; 15,990 feet in the Fifth, Sixth, Seventh, Eighth, Ninth, Tenth and Twenth fourth Wards; 26,840 feet in the Eleventh, Twelfth, Sixteenth, Seventeenth, Eighteenth and Nineteenth Wards; 25,993 feet in the Thirteenth, Fourteenth, Fifteenth, Twentieth and Twenty-first Wards, and 2,174 feet in the Twenty-third Ward. The average cost of laying this pipe was eighteen cents per lineal foot. The population of water takers from the city works is 533 584, with an aggregate area of supply of 371,965 square inches, from which a revenue is received of $146 46 per square inch of area of supply mains from reservoirs. The cost of raising water into reservoir at Fairmount Works, per million gallons, $1 74, including the interest on the cost of the works it amounts to $11 71. The cost at the Schuylkill Works, where steam power is used, amounted to $8 50. In addition to the large quantity of pipe laid last year, there were applications for 23,678 feet of pipe, but there being no appropriation, the work will have to be done this year.

It has been ascertained by a careful experiment, recently made at the Schuylkill works, that the best reciprocating engine there in use, with a consumption of one ton of coal, raised into the reservoir 626,682 gallons, while the Cornish engine, now in those works, with the same consumption of fuel, raised 987,761 gallons, showing a difference in favor of the latter of 58 per cent. The whole district, composed of the Seventeenth, Eighteenth, Nineteenth and Twenty-third Wards, which are now very indifferently supplied from the Delaware works, both as to quantity and quality of water, could draw their supply in abundance from these works, and at a reduction in cost to the Department of nearly 60 per cent. The Delaware works would then be dispensed with, and the pumping main could be used as a distributing main to that portion of the city. This main is 13,260 feet long. To lay such a main would cost the city $47,825.

The report also states that the necessity for a reservoir, in the Twenty-Fourth ward is becoming every day more apparent. The stand-pipe has only a capacity of 17,000 gallons, about one half hour's average supply for the ward. The increased income from this ward would pay the interest on the cost, the first year after the construction of the reservoir. The report urges upon Councils the necessity of erecting works in the Twenty First ward, as the citizens of that ward are entirely without a supply of water, other than that obtained from wells; $100,000 is considered ample to build works sufficient for the supply of the ward, including engine, engine-house, and reservoir, at Flat Rock, and also a main extending from that point into and through Manayunk. A site for the reservoir can be procured at Flat Rock, within 1500 feet of the river, and at an elevation of 230 feet above tide. From these works the Twenty-Second ward could be readily supplied.

The First, Second, Third and Fourth Wards are now supplied from the Corinthian avenue reservoir, and it is proposed to extend the 16 inch main to Front street, to supply that portion of the city lying south of Washington avenue. The present population of these Wards is 103,784, which pays a water rent, by private consumers, of $86,804, and by manufactories, of $3,223.

The Fifth, Sixth, Seventh, Eighth, Ninth and Tenth Wards are supplied from the Fairmount works. The population of these Wards is 138,176, which pays a water tax by private consumers of $173,461, and by manufactories of $12,582.

The Eleventh, Twelfth, Thirteenth, Fourteenth, Fifteenth, Sixteenth and Twentieth Wards are supplied from the Spring Garden reservoir. The population of these Wards is 160,671, which pays for water rent by private consumers $174,319, and by manufactories of $15,807.

The Seventeenth, Eighteenth, Nineteenth and Twenty-third Wards are supplied from the Kensington reservoir. The population of these Wards is 107,162, which pays a water rent by private consumers of $62,429, and by manufactories of $7288; and it is proposed to add to the area of supply mains of 452.19 square inches. The total amount of water rents paid in all the Wards for private use is $504,067, and from manufactories $40,693.

The following shows the proposed extensions of the mains and their estimated cost: 250 feet of 30 inch main to connect the pumping main from Fairmount with the distributing main from Spring Garden, $4000; also, 700 feet of 20 inch main to connect the 30 inch from Spring Garden reservoir with the mains on Ridge avenue, $4000; 7000 feet of 30-inch main, from the reservoir on Poplar street to Broad and Columbia avenue, &c., $60,000; 5500 feet of 24 inch main, from Broad street, at Columbia avenue, to Sixth street, to connect with the 18-inch main from the Kensington Works, $37,000; 6100 feet of 20 inch main, from Kensington reservoir to Frankford road and Lehigh avenue, $31,000; 6500 feet of 12-inch main, from the crossing of Kensington avenue to Frankford road, &c., $16,000; 4500 feet of 16 inch main, from Frankford road to Richmond avenue, $16 000; 1900 feet of 16 inch from Fifth to Front, $7000; 5000 feet of 20 inch from Fairmount to Twenty second and Chesnut streets, $25,000; 1000 feet of 16 inch from Chesnut to Twenty-second street, $4000; 700 feet of 12 inch from Pine to South, $2000. A reservoir and 20 inch main for Twenty-fourth Ward Works, $100,000. A Cornish engine and 3250 feet of 48 inch main for Schuylkill Works, alterations, &c., $93,000. Works at Flat Rock, real estate, 12,000 feet of mains, &c., $126,000, making a total of $525,000, which the Chief Engineer and the Committee on Water think should be expended as soon as possible.

THE WATER WE DRINK.

FAIRMOUNT PARK.

To the Editors of the Sunday Dispatch:—The Journal of Common Council for the last three weeks affords some curious details of city legislation; and to those who would like to see a fair illustration of how not to do it we commend this Journal.

First, We have a report from the Committee on Finance informing Councils that for a period of over sixteen years the city authorities have been negotiating for the purchase of the old wharves which commence at the foot of Coates street and extend up to the Lemon Hill estate, now forming part of Fairmount Park. In this report the Committee heave a sigh over the loss sustained by the lovers of the beautiful in nature by this Chinese wall, which has so long shut off the visitors to Fairmount from the park grounds; and this will no doubt be responded to by the thousands who have been besoiled and bedraggled in their efforts to reach the park through the mud lane styled "Landing avenue" on the sign boards. The Committee say:

"It can hardly be doubted that could the city have obtained possession of this strip of ground in 1843, and thus have formed the connection between the grounds at Fairmount and Lemon Hill, steps would have been taken to lay out the grounds for the pleasure of the citizens, and a generation which has since passed away would have been in the full enjoyment of this beautiful place."

We are further informed that petitions signed by every class and profession, and by property holders to the amount of many millions, have been presented to Councils, urging the purchase of these old wharves and the formation of the park. We have also a letter to the committee from Eli K. Price, Esq., one of the owners of the wharves, announcing that they (the owners) "have come to the conclusion that sixty thousand dollars, in the city six per cent. bonds, would be a fair price for those wharves, and such bonds to that amount they would accept for them." The report closes with the following remarks:

"The possession of these wharves by the city has for years been regarded as important *to protect the water we drink;* but now the speedy acquisition of the ground is a pressing necessity for the completion of the new park in accordance with the plan adopted by Councils. It is very much to be regretted that the committees which from time to time have had the question before them have been unable to get the owners to agree upon a fair and just equivalent for the property; and the sum named by your committee is as liberal, in their judgment, as is consistent with justice."

Accompanying this report is an ordinance, reciting that these old wharves have been included in the design adopted by Councils for the improvement of the park, thus making a continuous water front from the Wire Bridge to the north end of the park above the Spring Garden water works; that should this strip of river front not be obtained by the city it may, and probably will, become a nuisance, by the erection of factories thereon, which will not only fill the water with impurities, and that immediately above the forebay, but also destroy the connection between Fairmount and the park. Section I. of this ordinance declares that Councils, by virtue of the Act of Assembly of May 13th, 1857, do select and appropriate this strip, to be laid out and maintained forever as an open public place for the health and enjoyment of the people. Section II. empowers the Mayor to negotiate with the owners of said ground relative to the price thereof, with power to agree on said price and bind the city therefor, *provided,* the same shall not exceed $25,000. Section III. provides that in the event of the owners declining to accept the sum named, the Mayor shall notify the City Solicitor of such disagreement. Section IV. directs the City Solicitor, upon receiving information from the Mayor of a disagreement with the owners of the wharves as to price, to take measures to have a jury appointed by the Court to assess the damages as provided by law.

This ordinance passed Select Council by a unanimous vote, and Common Council by a vote of 54 to 12. And it may be here noted that the three representatives of the Third ward—a ward that pays less taxes than any other, and contains perhaps a greater number who by their poverty are compelled to remain in the city the year round—voted against the measure.

One of these gentlemen, Mr. Andrew Miller, asked leave to place on the Journal a protest against the ordinance—and there it is in print, as funny a paper as ever appeared to public view. He gives a hideous picture of the old wharves, and describes them as "four acres of quagmire;" he also says, "the whole of it has been made by filling in the dirt and offal of the neighborhood." Again, "There *is* two water courses passing through it into Fairmount dam; one of which—perhaps both—must be kept open for the accommodation of the adjoining property. All the hill side between Landing avenue and the Railroad, containing from ten to fifteen acres, is nearly filled with houses, the offal from which has no other way to pass but into Fairmount dam." After placing this rather unpleasant statement before a half million of lovers of pure water, Mr. Miller consoles us with this reflection: "It is not pretended that this land, or these houses, do any injury to the water." He indulges in some very innocent freaks of fancy in reference to the cost of the park, which it is hardly worth while to notice, especially as the Journals of Councils of 1857 establish the fact that the northernmost portion of the new park cost the city *just one-half the sum* named in this protest, and that the southernmost portion cost the city exactly $5000 more than he states. The truth is, this splendid park, extending a mile along the margin of the Schuylkill, and containing, according to this protest, "over one hundred acres of land suited to the purpose, devoted to public use as a park," has cost the people of Philadelphia the sum of $140,000—an amount very little if any more than the cost of the three-acre patch now enclosed, planted and lighted, known as Jefferson Square.

But let us return to our mutton—the Journal of Councils. The last printed Journal furnishes "a message in writing" from His Honor the Mayor. It is a veto of the ordinance which the preceding week passed Councils with so much unanimity. The Mayor assigns his reasons:

First. That the ordinance makes it his duty to negotiate with the owner or owners of the wharves, without specifying who such owner or owners may be.

Second. That the power given to the Mayor to agree with the owners relative to the price of the property, is by the Act of Assembly of May 13, 1857, to be exercised by Councils.

Third. Because he entertains the opinion that *the right of eminent domain* should never be resorted to but in cases of extreme public necessity, where the safety and health of the community absolutely demand it.

We have fairly but briefly stated the reasons of the Mayor. The first two objections are unworthy of that official. They manifest a small, pettifogging spirit, which we always believed him to be above. He not know who the owners are, with the printed report of the Committee from which we have quoted, before his eyes? He not know who the owners are, with the letter before him signed by Messrs. Price, Townsend and Ogden, asking Councils either to accept the wharves at $60,000 or reject them? If the Mayor is really so blind as not to see the names of the owners, two of whom are his brother members of the bar, it is remarkable how keen his vision becomes when treating of dollars and cents. Listen to him: "In the present instance it is *well known* that the estimate placed by the owners upon their property far exceeds the price to which the Mayor is limited in the offer for its purchase, *and perhaps may exceed the damages that would be assessed by a jury.*"

In this paragraph his Honor furnishes the key to this singular message. He permits his friendship for Messrs. Price & Co. to lead him to do injustice to himself, and to ignore the wishes of ninety-nine out of every hundred of the citizens. While admitting the *right of eminent domain,* he practically denies it, on a pretext that a jury may not give damages quite up to the figure at which the wharves are held. Now, in all candor, we differ from the Mayor on this point. The owners of these wharves are gentlemen of the law, familiar with juries, and would take care to lay all their evidence fairly before the jury who would be appointed to assess the damages, and we are not to take it for granted that any injustice would be done them. Certainly every honest man in this community would be glad to see a full and even liberal measure of damages awarded them. Some croaking demagogue who forever feeds at the public crib, though he pays no taxes, might howl over "the plethoric coffers of some real estate owners," or declaim against those who "live in luxurious indolence upon money wrongfully taken from the tax-payers;" but the real tax-payers and the great body of the people would cheerfully acquiesce in the most generous compensation to any citizen whose property becomes necessary for the public use. Mr. Miller in his "protest" insists upon it that "it is highly probable the jury will assess the damages at the price the owners have put upon the wharves," and therefore he votes against giving to the people the "quagmire" as a passage-way to their park. His Honor, the Mayor, on the other hand, fears the jury might not come quite up to the right mark, and therefore he vetoes the ordinance. Here extremes meet, shake hands, and unite to injure irretrievably a pleasure ground which bid fair to become one of the most beautiful in the world. A year ago Councils adopted a plan of Sidney & Adams, which provides for a grand avenue over these wharves connecting the grounds at Fairmount with the park. The maps in the new directories have the park laid down as embracing these wharves. But now we are indebted to the Mayor for the blow which strikes down the chief ornament of the city, and paralyses the hands of the thousands who have stood by this beautiful spot, and, up to the present day, carried it triumphantly through all the assaults of its malignant and bitter enemies. And we are to suffer this great wrong to our city simply because the gentleman who now fills the office of Mayor has scruples about resorting to the right of eminent domain in any but cases "of extreme public necessity."

Now, in the name of common sense, is not the public acquisition of these wharves a case which comes within the very language of the Mayor? Can he point out any other case which is stronger than this? Can he instance any case with half its merits? The water we drink is at stake. These wharves are at the very fountain from which we draw water daily, for the wants of half a million of souls. The front on Landing avenue will now, perhaps, be sold out in lots, and be soon covered with buildings of all kinds, with their cesspools emptying into the basin. The present owners will realize their money from sales, and a hundred colonists may cover the ground within a year or two. What, then, will be the reflections of the Mayor, when he looks upon the work of his hands? With what degree of satisfaction will he look over the reports of the engineers of the water-works, and read the earnest appeals of those intelligent gentlemen to Councils, to guard the shores from all impurities likely to contaminate the water? Mr. Graff, so late as 1857, says, "The impurities thrown out from the east side of the river cannot be sufficiently deflected from the banks to reach the rapid current of the river, but hug the shores, as such matters generally will, and are carried almost directly toward the mouth of the forebay of the water-works, there to be pumped up and supplied to our citizens." He considers the retention of all this line of river front, from Fairmount to the Spring Garden works, of the utmost consequence to the city.

And even looking at the question from the park side of the case, it is one in which there should be no scruple in the mind of the veriest fogy among us as to taking the property under the Act of Assembly. Cut off the connection of the park from Fairmount, and thousands of those for whom this charming place was intended—women and children—will be deterred from a visit to the river bluffs, if these banks can only be reached through the mire of Landing avenue. In any view we may take of the question, we cannot shut our eyes to the fact of these wharves *being essential to the health, comfort and well-being of the city.* The closing remarks of the Mayor are liable to severe criticism. There is nothing in the ordinance, in the Act of Assembly, or in the character of our citizens, to justify his conclusion. But our space will not allow us to dwell longer on the subject. The city of New York, with the spirit and energy of a live people, and in exercise of the right of eminent domain granted to the corporation by the Legislature, has secured eight hundred and forty-three acres, comprising about nine thousand lots, belonging to almost as many different persons, and has paid the damages awarded by the jury, without the slightest complaint on the part of her citizens. Philadelphia has for sixteen years been higgling with the owners of these old wharves, which are absolutely necessary to form the proper connection of our park grounds, as well as to prevent our being poisoned with the filth which will be there engendered. And our eminently conservative Mayor, instead of using his officia influence to consummate this protracted negotiation gives the weight of his official power to retard, if not forever to destroy, the plan adopted with so much unanimity for the laying out of the park. Is it any wonder we are spoken of as "a one-horse town?" Must we not all acknowledge that our chief officials are not the most eminently qualified for the stations they fill? Let us hope that the next generation will display more intelligence, spirit and energy than this of our day.

P.

267

PHILADELPHIA, MARCH 21, 1861.—DEPARTMENT FOR SUPPLYING THE CITY WITH WATER—ENGINEER'S OFFICE, No. 918 CHERRY Street.

SEALED PROPOSALS will be received at this Office for the necessary IRON PIPE, IRON CASTINGS, BRASS CASTINGS, LEAD, GASKET, COAL OIL and TALLOW, that will be required during the year 1862.

IRON PIPES, BRANCHES, &c.

Such amount of Iron Pipes, Branches, &c., as may be ordered by the Chief Engineer. The metal to be of such quality as may admit of being readily drilled or cut, free from all imperfections and cast from such pattern (furnished at the expense of the contractor) as the Engineer may approve. Each pipe must be proved to a pressure of three hundred feet of water, and delivered to his order, in the city, free of all charge.

The pipe is to be as follows, viz: 263

3-inch	pipe	length of	9 ft,	and weighing	130	lbs.
4	"	"	9 ft.	"	190	"
6	"	"	9 ft.	"	310	"
8	"	"	9 ft.	"	420	"
10	"	"	9 ft.	"	490	"
12	"	"	9 ft.	"	550	"

The Branches and Turns by the ton of 2240 lbs. The weight must be marked on each pipe and branch. The full average weight will be required, the Engineer reserving the right of sending an inspector to the works of the contractor at any time.

IRON CASTINGS.

Such iron castings as may be ordered by the Chief Engineer for stop-cocks, frames and covers, fire plugs, cases, &c., to be delivered at the Shop, 918 Cherry street.

BRASS CASTINGS.

Such brass castings as may be ordered by the Engineer for stop cocks, fire plugs, ferules, &c., to be delivered at the Shop, 918 Cherry st.

LEAD.

Such amount of the best Spanish pig lead as may be ordered by the Chief Engineer, to be delivered at the Shop, 918 Cherry street.

GASKET.

Such amount of gasket for laying pipe as may be ordered by the Chief Engineer, to be delivered at the Shop, 918 Cherry street.

COAL.

Such amount of anthracite coal as the Chief Engineer may order for the use of the different works, viz:

Schuylkill Works,	say about	3000	tons.	
Delaware Works,	" "	2000	"	(Lehigh.)
24th Ward Works,	" "	700	"	
Fairmount Works,	" "	50	"	

The coal at the Schuylkill Works to be delivered in the coal shutes; at the Delaware Works, on the wharf; at the Twenty-fourth Ward Works, in the coal shute; at Fairmount Works, at the mill house. The coal to be of the best quality lump or steamboat size, and free from bone, slate or dirt. Bids will be received for the supply of each works separately, and must state the kind of coal to be supplied. The coal will be weighed at the works when delivered.

Estimates to be made per ton of 2240 pounds.

OIL.

Such amount of Sperm, Lard and Coal Oil as may be ordered by the Chief Engineer for the different Works, to be delivered at the several Works.

TALLOW.

Such amount of Tallow as the Chief Engineer may order for the use of the different Works, to be delivered at the several Works.

The bids for the above Supplies must be endorsed, stating what they are for.

The Chief Engineer reserves the right to refuse any part of the bids, or to make such disposition of them as may be to the interest of the Department.

Proposals will be received until April 1st, 1862, 12 o'clock, noon. Bidders are invited to be present at the opening of the bids in the Committee Room, S. W. corner of FIFTH and CHESNUT Streets, at 3 o'clock.

No bid will be received, except it is accompanied by a Certificate that a Bond has been filed according to the provisions of an ordinance, approved May 25, 1860. ISAAC S. CASSIN,
mh21-eod3t§ Chief Engineer of Water Works.

299

COMMUNICATED

To the Editor of the True American.

SIR—An editorial article appeared in your paper of the 16th instant stating that there are entire districts (in Philadelphia) where water cannot be drawn at a height of 15 feet; nay, where a supply cannot be obtained at all. This statement, made doubtless without any intention to injure the reputation of the waterworks of Philadelphia, would, if not corrected, detract from their real merits. You would therefore confer a favor by giving publicity to this communication.

To my knowledge, there is no place throughout the city of Philadelphia, "where a supply cannot be obtained at all." But there are many places where an adequate quantity of water, for all purposes, cannot be had, although, as you have truly stated, the head of the water in the reservoir is about 60 feet. This deficiency of water in some places, is owing, in a great degree, to the fact that the main pipes, when first laid, were no larger than would afford to supply for the immediate demand of the citizens. When the population increased, of course, the old pipes were not sufficiently large to satisfy the greater demand.

At the time those water works were commenced, those employed to erect them did not probably possess that knowledge of hydraulics, which would give them a foresight that the pipes laid would not answer the increased demands, or if they did, they exercised a false system of economy in laying pipes which they were certain that an increased demand would soon compel them to take up.

I do not, by any means, desire to detract from the well bought reputation of the water works of Philadelphia. They are the most extensive, and probably the most perfect in the Union. They reflect a great deal of credit on the gentleman who has chiefly executed them: and most deservedly do they rank foremost among improvements of that kind; for, upwards of a million were spent in experiments before the present plan was adopted, and undoubtedly they have at last succeeded. But, we may ask, why it was that such an enormous sum was squandered away? Was it because the superintendance of the works was confided to persons unacquainted with the subject? We are led to conclude, from the history of those works, that they were commenced without any calculations as to whether the pipes, and other divisions of the works, would answer the purposes for which they were intended, and that if they suited, they were permitted to remain; if not, they were removed, and replaced again and again until they finally answered. Indeed

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The Water Department.

[For The Press.] Feb 23/60

Several of the daily papers of last week were so lavish in their praises of the Water Department, and of the annual report of its Chief Engineer, just issued, that I eagerly sought for and obtained a copy of that document, congratulating myself, as a tax-paying citizen, that we had at least one department well managed.

After reading with much interest some twenty or thirty pages of matter, which I have since found to be almost a verbatim copy of the reports of former heads of the Department, and ascertaining from elaborate tables how many quarts of oil had been saved during the past year, I at last reached that part of the report which applies to the work done during the last and that proposed to be done during the next year.

Expecting fully to find a saving in the expense of the work done, in the same proportion with that said to have been effected in the oil and tallow, I provided myself with the annual report of the Department for 1858, for the purpose of making my own comparisons.

I was immediately struck with the *remarkable accuracy* of the estimates of the Chief Engineer. For instance, on page forty-five of the report for 1858, I find the following estimate:

Two additional turbines and four pumps, with *main, stops, connections, &c.*	$35,000 00
Extending mill house along the mound dam, sixty feet	15,000 00
Raising reservoir on Corinthian avenue, nine feet, building retaining walls in Corinthian avenue, Poplar street, and Twenty-second street, increasing its capacity fourteen millions of gallons	32,000 00

For these amounts appropriations were made by Councils, who doubtless supposed that for the sums estimated they would obtain a complete work.

The report for 1859, however, informs them in the coolest manner possible, that $20,992.17 has already been expended on the extension of the mill house, or an excess of $5,992.17 over the amount estimated to complete it, when an inspection will show that nothing but the north wall of the building is erected to its intended height, and that the first foundation stones have yet to be laid for at least two-thirds of the intended building.

We are, therefore, informed that $20,000 will yet be required to finish the work. Supposing that this sum will be sufficient to finish it (although the previous estimates of the engineer do not give us much hope that it will,) we shall then have the entire cost of the mill-house extension as follows:

Expended in 1859, per report of Chief Engineer	$20.992.17
Additional appropriation asked for 1860	20,000.00
Together	40,992.17
Estimate for the work, page 45 of report for 1858	15,000.00
Showing an excess over the estimate of	$25,992.17

It is true that the engineer has now discovered that the mill house proposed will not be large enough to hold the work it should contain, and a somewhat larger house than that estimated for is now building; but this is only a proof of the want of judgment of the estimator, and as the house is not one-third finished, the discrepancy between cost and estimate is still enormous.

This is for the mill house alone. Let us follow out the report to some other items:

The estimate for "two additional turbines, and four pumps with main, stop, connections, &c." is	35,000.00

By the model report of 1859, we are quietly told that $13,000 additional will be required "for *connecting* the new work to *main* and stand pipe." I suppose, in a short time, Councils will be informed that ten or fifteen thousand dollars will be required to put in cog-wheels and cranks to *connect* the turbine wheels with the pumps. Why not? Is it not just as consistent to present an estimate for wheels and pumps, without the necessary gearing to connect the two, as to put in as complete a deceptive estimate for pumps without a main to connect them with the reservoir, into which they are to pump the water?

Now, let us take the Chief Engineer's own figures, and see what the works upon the mound dam are likely to cost complete:

Expended on mill house extension in 1859	$20,992 17
Appropriation asked for do. do. 1860	20.000 00
Two turbines and pumps per estimate of 1858	35,000 00
Mains to connect the pumps with the stand-pipe, now discovered by the Chief Engineer to be actually necessary to enable the pumps to fill the reservoir	13 000 00
Total	$88,992 17

Or, the unreasonable excess of $38,992.17 over the original estimate on page 45 of the report of 1858.

On the same page of that report, the estimated cost of raising the reservoir at Corinthian avenue, with retaining walls complete, is		$32,000 00
Per report of 1859, we find that there has already been expended on that work	$37,499 99	
And that an additional sum is asked for of	8,500 00	
Together		45,999 99
Or an excess over the estimate of		$13,999 99

We have therefore, on the work now in progress, the following excess over the estimates:

Excess on mill-house extension, wheels, &c.	$38 992 17
Excess on raising reservoir	13,999 99
Or a total excess of	$52,992 16

Such good judgment, and extreme accuracy in estimating, should give Councils very great confidence in making appropriations to the Water Department. It is not to be wondered that the daily papers representing the dominant party should laud to the skies so very *reliable* an engineer, who, to quote from one of the papers, "Has manifested such a degree of forecast and provision for the future." That paper, in its zeal for Mr. Birkenbine, even claims for him the conception and improvement of Lemon Hill as a park, and the construction of a sewer on Pennsylvania avenue—measures proposed to Councils by others, previous, it is believed, to Mr. Birkenbine becoming a citizen of Philadelphia, commenced and prosecuted by the heads of other departments, some time before the city so fortunately secured the services, as Chief Engineer, of one whom the above figures show to be so accurate and reliable. "DOTS."

141

THE WATER WORKS.

No one can, for a moment, dispute that the tearing up of our pavements for the purses of the water, or gas company, is a nuisance of the worst kind; being as inconvenient to the citizens, personally, as onerous to their purposes, generally. The pavements now in use, when once torn up can never be replaced with firmness; and therefore is it abundantly necessary to avoid it, as much as possible. We are aware that it is occasionnally imperative, but when we find it so constantly done we see at once that there is some radical defect in the original laying of the pipes. This is palpable to every man's common sense. When a Gas company drives a four inch main, and in a year after takes it up and substitutes a *five*, which again gives place to a *six*, or eight, it is not only an outrage on public convenience, and public property, but betokens in the institution so operating, a contemptible parsimony, or a want of ordinary foresight. We do not assert that the Gas company is most to blame: nay, we are more disposed to think, from constant complaint, and frequent information, that the Water company is the party most in fault. We are told that the pipes they are now driving must inevitably, at no distant period, be replaced by others of greater calibre; and thus the pavements, now forming will have to be torn up, and so inevitably destroyed. These things vitally concern the public interest, and the public have a right to demand that such precaution be used as will—so far as human foresight goes—prevent this onerous result. It is particularly necessary in a public establishment like the Waters works, that a competent man, and none *but* a competent man, should superintend the laying of the pipes. We know not in whose control this matter is, but are led to treat upon the subject by seeing a ten inch main being laid in Rampart street, where there should be, at least, a *twelve* inch pipe.

The charter of the Commercial Water works, makes it imperative on the company that they should supply the city at all points, up to an elevation of 15 feet. Now as their reservoir is but some 24, or 25 feet high, this requires the utmost circumspection in laying the pipes, and an intimate knowledge of the nature of fluids when carried through such a medium. It wants the nicest possible arrangement of the bore, or calibre, of the mains, to supply the city agreeably to the charter from a reservoir of such trifling elevation. It is trite to say "water *will* find its levlel," yet if a main running from the works to Esplanade-street be stopped at Canal, and an opening be made equal to the dimensions of the pipe, how is a supply to be obtained both at Canal st. and Esplanade st.? The nearest one to the fountain head is sure to draw off the water—then what is to become of the lower? There must necessarily be required a large and elevated head with a carefully graduated arrangement of pipes [illegible] adequate supply; and no[illegible] sufficient and *practical* man can see to these mani[illegible] As we before observed, we know not in whom the power is vested, but having taken so active a part in the paving of our city, we feel bound to urge the necessity of a most careful superintendence, so as to prevent our streets being constantly torn up to remedy the errors of ignorance, or the parsimony of folly. Beyond a very skilful arrangement in graduating the size of the pipes—in seeing to the making of fitting appertures for the supply of public hydrants, or private cisterns, it is imperatively necessary to see that the Reservoir is every way adequate to the demands of the city, and the requirements of the charter. The company is bound to supply all individuals, even to an elevation of fifteen feet; to furnish water in case of fire, and to irrigate the streets copiously, and at all required times. Pipes of large capacity, say 16 or even 18 inches bore, are articles of primary importance, but these are useless without some practical intelligence superintend their ramifications. An experienced man, to overlook these mechanical operations is alike demanded by the interest of the stockholders, and the rights of the citizens. We know not whose duty such care may be, but certainly the President of a Bank is any thing but a fit man to regulate the mechanical details of public Water Works.

In Philadelphia, though the works are generally esteemed the most perfect in the Union—and although the head of the Reservoir is elevated 60 feet, there are entire districts where water cannot be drawn at a height of 15 feet, nay, where a supply cannot be obtained at all. And why is this? not from any want of water at the head, but from the want of a head in laying down the proper pipes. The citizens, dwelling in and about Franklin square, for instance, are constantly complaining through the papers, of an inadequate supply. Were such the case with us, the Commercial Bank's charter were justly forfeited, yet how much more likely is it to happen here? The Bank has the power, if properly exercised, of realizing the objects of the Legislature, the wishes of the citizens, and the interests of the stockholders: but this cannot be done without fit agents. Let not the President suppose the power to will, necessarily carries with it the wisdom to act. Let not our streets be torn up, and our pavements destroyed, because ignorance is cheaper than capacity, or power delights in patronage.

The Water Department.

[For The Press.]

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This is for the mill house alone. Let us follow out the report to some other items:

The estimate for "two additional turbines, and four pumps with main, stop, connections, &c.," is	35,000.00

By the model report of 1859, we are quietly told that $13,000 additional will be required "for *connecting* the new work to *main* and stand pipe." I suppose, in a short time, Councils will be informed that ten or fifteen thousand dollars will be required to put in cog-wheels and cranks to *connect* the turbine wheels with the pumps. Why not? Is it not just as consistent to present an estimate for wheels and pumps, without the necessary gearing to connect the two, as to put in as complete a deceptive estimate for pumps without a main to connect them with the reservoir, into which they are to pump the water?

Now, let us take the Chief Engineer's own figures, and see what the works upon the mound dam are likely to cost complete:

Expended on mill house extension in 1859	$20,992 17
Appropriation asked for do. do. 1860	20,000 00
Two turbines and pumps per estimate of 1858	35,000 00
Mains to connect the pumps with the stand-pipe, now discovered by the Chief Engineer to be actually necessary to enable the pumps to fill the reservoir	13,000 00
Total	$88,992 17

Or the unreasonable excess of $38,992.17 over the original estimate on page 45 of the report of 1858.

On the same page of that report, the estimated cost of raising the reservoir at Corinthian avenue, with retaining walls complete, is $32,000 00

Per report of 1859, we find that there has already been expended on that work	$37,499 99
And that an additional sum is asked for of	8 500 00
Together	45,999 99
Or an excess over the estimate of	$13,999 99

We have therefore, on the work now in progress, the following excess over the estimates:

Excess on mill-house extension, wheels, &c.	$38,992 17
Excess on raising reservoir	13,999 99
Or a total excess of	$52,992 16

Such good judgment, and extreme accuracy in estimating, should give Councils very great confidence in making appropriations to the Water Department. It is not to be wondered that the daily papers representing the dominant party should laud to the skies so very *reliable* an engineer, who, to quote from one of the papers, "Has manifested such a degree of forecast and provision for the future." That paper, in its zeal for Mr. Birkenbine, even claims for him the conception and improvement of Lemon Hill as a park, and the construction of a sewer on Pennsylvania avenue—measures proposed to Councils by others, previous, it is believed, to Mr. Birkenbine becoming a citizen of Philadelphia, commenced and prosecuted by the heads of other departments, some time before the city so fortunately secured the services, as Chief Engineer, of one whom the above figures show to be so accurate and reliable. "DOTS."

An Admonition for the Future.

The Watering Committee in Councils have a lively time of it. The task of managing BERKENBINE is like that of driving a sorrel pig up a blind alley. When too late, the Councils are now regretting that they didn't elect GRAEF to the post of Chief Engineer, instead of the present slippery incumbent. The inconsistencies every day developed in the operations of Mr. BERKENBINE, are of a character that entirly subverts all theories of appropriation, and has sprung in the Water Department a stupendous leak, that can only be stopped by the election of some competent officer. Since the reign of BERKENBINE, the water works have been the field of costly experiments and repairs, and but a short time ago the city only escaped by a hair's breadth the loss of all the recent expenditure, through the late flood that raised the waters of the Schuylkill. The plan of Mr. BERKENBINE has always been, to have at the end of the fiscal year a quantity of unfinished work, so important as to lead Councils to re-elect him on the ground that, what he has begun, he alone can advantageously complete. And it is no less odd than true, that not a single piece of work has ever yet been done by this erratic officer, but that for which a second appropriation has been necessary. BERKENBINE is cuning, after a fashion. He presents low estimates for work, which he knows very well will be published in the daily papers, and will lead the

Sunday Transcript
23 Septr. 1860

public to suppose him to be as efficient in the discharge of his professional duties, as he is in the duties of the Church to which he belongs. But of the extra appropriations the daily papers take little or no notice, and the fact that over a hundred thousand dollars have been appropriated to the Water Department beyond BERKENBINE's estimates for the work that he has done, is a fact of which nine-tenths of the public have taken no cognizance. Eighty thousand dollars more are now wanted. In the construction of the "Corinthian improvement," BIRKENBINE now says that "he didn't include the cost of a new main," and coolly informs Councils that $80,000 more will be necessary before the increased supply of water can be given to the citizens. As is all very natural, Councils are becoming very uneasy of this kind of work. Even in so small a matter as a flight of steps down the cliff at Fairmount, this singular personage closed the eyes of Councils. He presented his estimates for the steps, and received the appropriation, when he demands some hundreds of dollars more for iron railing, which he now says he didn't include. As we have already intimated, in this manner a hundred thousand dollars, over and above the expected expenditures, have already been absorbed, while the affairs of the Water Department are in almost as hazardous a condition as a gunpowder mill under the management of a lunatic. Only last Thursday, $3,000 more were appropriated for repairs to the pumps, which BIRKENBINE says "have been badly strained by overwork." As our present object is to give facts that the general public derive from no other sources, we leave the reader to form his own idea of the trials of the Watering Committee, and of the heartiness of their regret that they continued in office a person so arrogant, unmanagable and incompetent. Had the bonds of party been less strongly fastened upon Councils, they would have heeded our admonition last Spring, and have adopted a different course. They are now upon the stool of repentance, and from the best of reasons we are prepared to say that another year will witness the retirement into that obscurity from which it is a pity he was ever taken, of the vascillating and irreliable BIRKENBINE.

Management of the Fairmount Water Works.

To the Editors of the Sunday Dispatch:—Having read with much interest the comments of "Locomotive" on the management of the City Water-Works in some of your late issues, I beg permission also to point out some of the errors so far committed in the present extension of these works, and commencing west of the causeway over the forebay, (or head-gates,) must differ from "Locomotive" as to the work being "judiciously" done; for the three pipes, instead of going down with gentle curves in horizontal cross section with each other, are placed one on the other, and are now being walled in, so that the lower pipes cannot be repaired or renewed without removing the upper ones and the stone work around them; besides, they are not clear of all "obstructions," as the old broken arch testifies, and which could have been removed without "difficulty."

East of the causeway no difficulty presented itself in laying these pipes to the foot of the ascending main in the tower, where the three enter a single horizontal pipe of some four feet diameter, at a slight remove from a right angle; but the entrance into this latter pipe being well rounded off towards the vertical main, and nearly equal in area to the three pipes combined, and some seven times the area of one of the pumps, I do not think as much difficulty will be experienced as "Locomotive" anticipates; for if the two pumps to each turbine are properly connected at right angles, there will never be more than the effects of *three* pumps in a continued flow of water passing through this pipe at one and the same time, and the vertical *tower* pipe being some 2800 inches in area, but little obstruction will be offered the water in its upward motion until its arrival near the top of this pipe, where it is forced to pass off by a *single* 30 inch main, and at a right angle. Here the real difficulty begins, for if *three* 30 inch pipes are necessary to bring the water from the turbines to this *tower* pipe, one of 30 inches is certainly not sufficient to convey it off again; or if *one* is all-sufficient for the latter purpose, *three* are certainly unnecessary for the former purpose. This single pipe leaves the lower main at the plateau at the base of the reservoirs with a rising angle, until it enters the *stand-pipe* of the old works *above* the distributing main that supplies the Corinthian avenue basin, the centre of the new main being some four feet above, and passing directly over the distributing main. To supply this latter main the water must pass two right angles, forming a semicircle of some two or three feet radius, and impinging directly against the water from the old works, when going at the same time; but how the water from the new works will find its way into the old basins it is very difficult to say at this time, except by its passing *down* the pipe from the breast-wheels with two right angle turns into the old rising main.

But to return to the foot of the vertical *tower* pipe, we find arrangements on the north end of the large single four feet pipe for another attachment when found necessary. Here there will indeed be got up a "beautiful commotion" as the water struggles around the *three* acute angles of this pipe, the retarding force being two to one to that in a straight pipe, for counting the friction in the latter as one, that through a regular curve is 1 11-100, and around a *right angle* 1 55-100, and full double in the present case. But letting the responsibility of these errors rest on those who commit them, I will proceed to examine other parts of this "*improvement*," for I consider the whole plan as defective and out of all proportion, the pipes being much larger than necessary, and the *folly tower* entirely a useless and *un*necessary expenditure.

The pumps are some 18 inches in diameter, with 6 feet length of stroke—two to each turbine—and should be attached at right angles to cranks on the same shaft. Then a pipe large enough for one pump is quite large enough for two, the flow of water being very near equable, and not retarded and accelerated at every stroke of the piston. A pipe, therefore, of 18 inches diameter is large enough to convey the water from every two pumps to the basins, and should have been placed in the ground on the north side of the wheel-house, and by gentle curves carried over the causeway of the forebay and up the hill, or by curved connections passed off to the street mains and other reservoirs. By this arrangement the expense of large pipes and folly towers would have been saved the city, and the excavation of a large hole at the foot of the mount, endangering the future safety of the reservoirs, and marring the beauty of the hill, avoided. The stone taken out was dearly paid for, as well as the gravel from another part of

I also notice some parts of the machinery to be very heavy and out of proportion for the work it has to perform: for instance, the shafts for working the pumps (and, I judge, third movers at that) are great masses of cast iron, larger I think than the shafts of the old breast-wheels, and far stronger than necessary to drive two 18 inch pumps (one on each end) for a rise of from 90 to 120 feet.

The connecting rods are also very heavy, being solid and some 6 inches diameter in the middle and 4 inches at the wrists, with vertical braces, all strong enough for a 100 horse engine with the same velocity of piston. Why not have made them skeleton rods, like those in the old wheel-house; they are certainly lighter and more elegant to look at, and fully as strong.

The pump arrangements are bad. The water leaves the oval boiler plate flumes at a right-angle by a single pipe, and enters the foot-pipe at right-angles, passing right and left to the foot valves through right angles into the valve chamber, thence up through the discharge valves to the air chamber and delivery pipe by another right-angle, in which latter pipe the two currents from the valve chamber meet and pass off by yet another right-angle pipe into the rising main.

This plan of having two air chambers is a very bad feature in the arrangements, for the water will endeavor to flow when forced into one chamber, from that into the other, and being met by the counter current, (as the piston changes its action,) will cause a driving of the water from chamber to chamber in its struggle to escape at the right-angle outlet to the rising main.

The valves are something on the balance order, of cast-iron, working on a central wrought-iron guide rod, that must soon cut out by the action of the sand and grit floating at times in the water, and be a great source of trouble and expense. The stone foundations are too light to support the great weight to be placed upon them. In some parts the upper layers of stone overhang the base, especially under the foot of the columns that support the iron and brick roof that is to be. The policy of substituting boiler iron flumes for cut stone is very doubtful, as they must and will be destroyed by the combined action of the water and atmosphere in a comparatively short time, in defiance of all paint or composition that can be applied. "Locomotive" speaks of widening the causeway of the forebay to the full length of the piers; but that cannot be done, as the flume of the north breast wheel opens immediately south of the present arches. The east end could be widened sufficient to gently curve the rising main from the turbines up to the basin, as he suggests.

But I will close my remarks for the present by asking if the plan adopted and now being carried to completion is the best and most proper one for increasing the power of the City Water Works, when it is well known that the whole available water power of the Schuylkill passes through the present breast wheels and canal locks during the dry and hottest part of the summer, when water is most wanted, and all depending on an old wooden dam of some forty years standing, and not at the present time in the most secure condition, and on which should be spent some of the thousands now being thrown away? For what good can result from an increase in the *number of water wheels*, that when most wanted will have little or no water to drive them? Let those interested think of all this before double the appropriation already called for is expended in finishing the present misconception, the whole being only *an abortive attempt of a set of ignoramuses* to make for themselves a name at the expense of the public. Witness former conceptions of similar works. 275 MECHANIST.

A Timely Discovery—After the water was let out of the reservoir on Corinthian avenue, for the purpose of having the bottom cleaned, quite a large hole was discovered, the earth having given way underneath, letting the brick work down. The water, it is supposed, had been escaping through this hole for some time, but not in sufficient quantities to cause damage. Its discovery at this time, no doubt, prevented the future destruction of the reservoir. 277

Improvement at Fairmount.—The stone tower, which has been erected at Fairmount, on the spot where the stone for the new mill house was taken from, will soon be completed. It is 13 feet square, and 65 feet high, and will be surmounted by an observatory or look-out. To reach this point, workmen are now engaged in throwing an arch from a rock near the top of the reservoir to the tower, a distance of 18 feet. This crossing will connect the top of the tower with the terrace around the reservoir. The view from the top of the tower will be one of the finest to be obtained from Fairmount. 282

PHILADELPHIA, MARCH 9, 1862.

The Dispatch in Washington, D. C.

The Philadelphia *Sunday Dispatch* may be had every Sunday morning at the establishment of Bixler & Winchester, wholesale agents, No. 446 West Eighth street, Washington, D. C.

Water in Kensington.

The people of that part of the city formerly known as Kensington are still suffering from the consequences of the pride and folly of their Commissioners before the city and districts were consolidated. The District had been furnished for many years with good water from the city works, taken from the Schuylkill river. But this arrangement did not suit the Kensingtonians. They were determined to be independent of the city for either water or gas. The contract for the supply of water was made with the city in 1833, but in 1844 it was determined by the wise men of Camptown that they would not be under any obligation to buy from a larger and richer corporation. In 1844 the contract with the city was annulled, and a new one was made shortly afterward with the Districts of Spring Garden and Northern Liberties for a supply of water from the Schuylkill for fifteen years. This agreement would have furnished the Kensingtonians with as good water as they had previously had. But even this reliance upon foreign aid would not suit the spirited Commissioners of the District. In 1848 they procured the passage of an Act giving them authority to construct works for pumping up water from the Delaware river. Whether this enterprise was in order to give certain parties profitable jobs cannot be known; but the plan from the first was deemed to be objectionable by persons who believed that the refuse and discharges from the large numbers of vessels at Port Richmond above, and the washings from the shipping and common sewers below, would combine so as to render the Delaware water taken from any point opposite Kensington impure and foul. But the wise men of that district would not listen to the suggestions of prudence upon this subject. The Kensington Water Works were commenced, carried on, and finished in 1850, and since that time the "independence" of the district has in this matter been a continual source of regret and suffering to its citizens. Every summer a complaint comes from the houses supplied by the Delaware works. The basins have been cleansed again and again; the pipes leading out into the Delaware have been changed and extended with but a temporary relief; and the evils of the water system of the vicinity seem to be chronic.

At present it is said that a painful and dangerous form of dysentery and diarrhœa exists in the region supplied by the works at Gunner's Run, and the water is blamed for the consequences. The following handbill, which is placarded and circulated in the district, tells a strong story, and is couched in language which is exceedingly plain:

STINKING AND ROTTEN WATER—When will the people learn to let their reasoning faculties have their legitimate control? Arise and look before you are made captive by designing aspirants for filthy lucre. Will you all die before you open your eyes to see the cause of the sickness and mortality prevailing at this time in four of the upper wards?

The writers and speakers on the subject are either grossly deceived or recklessly wicked, or they would see the cause, which not one has touched. The evil which we ought to correct lies in the *dirty, stinking pipes* in the streets for the want of opening the fire plugs, which I am satisfied have not been thoroughly opened since Consolidation. When Kensington was by itself the plugs were opened twice a week—now almost *never*. Then we had good water, now bad. Then the dye works were in full operation, now they are and have been for eighteen mouths nearly quiescent, and many more causes which we now have not

Open the fire plugs and thoroughly drain off the stinking water; then if that does not help the water I will forever hold my peace, and then you may pull down the Kensington Works, place them where you please, and *make* as much or *steal* as much as you please, and I will submit, but not before it is tried. Look before you die or are eaten up by taxation. Remember, there is another election coming on. A SUFFERER, S. ATKINSON, M. D.

March 3d, 1862

The suggestion that the fire plugs should be opened may meet the evil. At all events the remedy is simple, and might be tried if there is not danger of the water freezing in the streets before it escapes, which would create a very unpleasant nuisance. The handbill seems to insinuate that the clamor upon the subject originates in a desire for the creation of a new job under the control of the Water Department. Have, then, the peculiar tactics of Birkinbine been thus early adopted by Cassin?

ER 12, 1860.

The Turbine Water Wheel Discussion—The discussion commenced two weeks ago, in Select Council, in reference to the awarding of the contracts for the turbine wheels for Fairmount, will be resumed on Thursday, when, it is said, a reply will be made to Mr. Neal's minority report. Mr. Neal, in closing his speech at the time of submitting the report, spoke as follows of American genius:—I shall say nothing against foreigners enjoying all the rights and privileges and means of happiness under our laws that we enjoy ourselves, whether they come from the torrid, the temperate, or the frigid zone; but we all understand that there is a disposition amongst scientific men in Europe to decry American genius. Some of their philosophers allege that man, as well as all other animals, degenerates as he migrates towards the setting sun. But whilst they are thus decrying Americans, they forget that the walls of every palace in Europe proclaim American genius, in the most fascinating and exalted art, by one whose birthplace was but a few miles west of this city, and one who was the President of their Royal Academy for many years. They forget that every river and every lake in Europe proclaim American genius, by the application of steam to the propelling of vessels. That on every hill top and in every valley, where Morse's wires are to be found, there is American genius, transmitting thought from city to city by a flash of lightning. And in every university, and in every college of learning, there is an American teaching them their own language.

Incendiarism—The alarm of fire between 10 and 11 o'clock on Friday evening, was occasioned by the burning of two wagon loads of straw, at different points, where they had been placed by their owners, prior to removal to the Philadelphia market. The first proceeded from the West Jersey Ferry Stables, and the latter from the stalls of Messrs. Parson & Smith. As both loads had been run under the sheds, the object of the parties firing them was evidently the destruction of the stables and barns adjoining. Fortunately, owing to the promptness of the firemen, their design was frustrated.

Enlargement of the Water Works.—The Committee on Water, of Council, will visit West Philadelphia, this week, for the purpose of selecting a site for a reservoir in that ward, so as to afford the citizens a better and more certain supply of water than can now be obtained by means of the stand-pipe. A portion of the committee, we understand, are rather opposed to this movement, or of starting any new work, until the improvements to the Water Works, now under way, are completed, and the cost of the same fully ascertained.

Philadelphia, Thursday, May 31, 1860.

LOCAL AFFAIRS.

Fairmount and Fairmount Park and its Improvements.—The Committee on City Property, at a meeting on Tuesday evening, agreed to report an ordinance to Councils to-day, accepting of the act of the Legislature, providing for the purchase of the strip of land on the west side of the Schuylkill, extending from the Wire Bridge to a short distance above Girard ave., and running back from the Schuylkill to the Pennsylvania Railroad, the whole strip containing about sixty acres, which is estimated to cost between $160,000 and $180,000. As soon as the ordinance passes Council, the City Solicitor will file a petition in Court, asking for the appointment of a jury to assess damages, &c., after which an ordinance will have to be created authorizing a loan to pay the same. This ordinance, however, will not be needed for a year or two yet. Upon the plan of the city, there are fifteen streets running through this strip of land, and it is estimated that the cost of grading said streets, whenever they shall be opened, would cost the city more than the entire amount asked for the property. If the ground is turned into a public park, it is probable a number of fine improvements will be made on the brow of the hill, the situation of the ground being most admirable for the erection of fine country seats.

The contract for building the new turbine wheels at Fairmount has been awarded to Mr. E. Geylen, of this city. The wheels are to be similar to the one now in use at Fairmount, but about three times as large, each one to be capable of forcing into the reservoir about six millions of gallons every twenty-four hours. Workmen are now engaged in filling up the unsightly hole at the base of the Fairmount Reservoir, made by the quarrying of stone therefrom for the new mill house. Nearly a sufficient quantity of stone has been taken out, and in a few weeks all traces of where it was taken from will be obliterated. Walks to the top of the reservoir will pass over it. A new carriage drive is now being constructed, so that vehicles can pass into the grounds at Green street, and make their exit at Coates st.

The work of grading and paving Landing avenue, from Smith's rolling mill to Pennsylvania avenue, where it crosses the Reading Railroad, has been commenced. The road is to be 70 feet in width, with a foot-walk on each side. Between the rolling-mill property and the line of city property a wall is being constructed, so as to protect the footway upon the avenue. At the intersection of Landing and Pennsylvania avenues a footway and stone stairway is to be constructed, for the purpose of giving free communication between the two avenues, the footway to be 12 feet wide in the clear. Along the northerly side of this footway, on the curve, a wall, two feet above the grade line of Landing avenue, is to be constructed, the angle between the avenues, at the curve, to be filled in and covered with grass. The improvement, when completed, will add greatly to the comfort of those visiting the park, either walking or riding.

Brooklyn City News.

EXCURSION TO THE ENGINE HOUSE AT RIDGEWOOD.

Yesterday afternoon the Mayor, Common Council, members of the Water Board, the Sewer Commissioners and a large party of other gentlemen, made an excursion to Ridgewood, on the invitation of H. S. Welles & Co., for the purpose of seeing the operations of the new engine, used for pumping water into the reservoir, which is now complete and in perfect working order.

The party, numbering about one hundred, took the cars at South ferry at 2 P. M., and others got on at Boerum street. After a brief halt at Bedford and at East New York, they proceeded to their destination, where they arrived about half-past two o'clock.

The party entered the engine house, and occupied themselves for an hour or more in examining the huge engine, which was in operation, the pump well, the furnaces and everything else of interest. The engine house consists of a centre building, with two wings, of brick, ornamented with brown stone facings. The entire length is 227 feet, depth of centre 77 feet, and of wings 45 feet. The engine is in the main structure and the boilers in the wings. The height is 46½ feet from the foundation to the cornice, and 56 feet to the peak of the roof. The floor is 40 feet above the pump well foundation, spring level 16 feet above the same, and tide level 4 feet. The chimney is 100 feet high, with a flue 4 feet in diameter. 194,000 bricks, 190,000 pounds of cast iron, and 55,000 pounds wrought iron, with $9,000 worth of cut stone, were used in the construction of the building. Everything presented a neat and cleanly appearance. Two spiral staircases lead to a gallery running round the hall, from which a good view can be obtained, of which a number availed themselves, and all expressed themselves gratified with the splendid appearance and action of the stupendous engine, which was the principal object which the visiters were invited to examine. Everything else was found in good condition.

After a sufficient time had been spent in examination, and a collation (preceded by a blessing by the Rev. E. M. Johnson) had been disposed of, Mr. H. S. Weller mounted a bench, and thanking those present for accepting the invitation he had extended to them to view the works, called upon Hon. S. S. Powell, Mayor of Brooklyn, who favored the meeting with a brief address. He congratulated the Water Commissioners, contractors and engineers for consummating so great a work, and dwelt upon the blessings of a supply of pure water and the impetus its introduction gave to the prosperity of the city. Twenty years ago a man would have been deemed insane, he remarked, to have predicted that at this day Brooklyn would contain nearly 300,000 inhabitants, and now he would predict that twenty years hence we would have a population of 750,000.

Rev. Dr. Kennedy followed, and in the course of his remarks referred to the first trip of Fulton up the North river in his steamboat, which he witnessed, and compared the progress made in steam power since and the opposition which had to be overcome. In alluding to the introduction of water, he referred to a circumstance which occurred some twenty-five years since. A gentleman from Baltimore hed conceived the idea of supplying the city of New York with water from the exhaustless springs under the Brooklyn Heights, and had hose made to stretch across the river for that purpose. The New York authorities, however, obtained an injunction, and the hose were taken up and sold to the Fire Department. He compared the past with the present, and predicted a great future for Brooklyn.

A. A. Low, Esq., followed, and spoke in terms of commendation of all that had been done towards the supply of Brooklyn with water, and congratulated those who were engaged in the work for having so successfully prosecuted their labors, notwithstanding the many difficulties they were compelled to encounter.

Samuel McElroy, Esq., then addressed the meeting, dwelling mainly upon the nature of the work performed, and giving accurate statistics in regard to all that had been done. Mr. McElroy is the engineer under whose superintendence the engine house, &c., were erected.

Speeches were made by J. W. Gilbert, Esq., Aldermen Kalbfleisch and Dayton, when the meeting adjourned to the cars, and in about half an hour arrived in Brooklyn.

The engine is a massive and yet beautiful structure, and was the principal object of attraction by the visiters. The cylinder (which is encased in a steam jacket) is 90 inches in diameter, with 10 feet stroke. The beam is 30 feet long, and weighs 25 tons. The bed plate is 40 feet long, double, and 30 inches deep. It was designed by and built under the supervision of William Wright, Esq., by Messrs. Woodruff & Beach, of Hartford, Conn. Its peculiarities are, that it has no fly wheel or crank, and that the stroke is controlled by a "cataract," which governs the time and the quantity of steam let in or out of the cylinder after having spent its force. The working of the engine is similar to the Cornish engine, upon which it is modelled, with the exception that it is made to work both on its up and down stroke, thereby having double the advantage. Each double stroke furnishes 1,054 gallons of water, and it is capable of furnishing 16,000,000 gallons in twenty-four hours. The flow is almost constant, with a variation of only two to three pounds pressure on the main pipe. There is no jarring motion whatever, notwithstanding the immense force brought to bear. The entire weight of the engine, including three boilers, is 440 tons. It is the first of the kind ever built, and was completed and put in working order on the 15th of March, 1859. Some improvements have since been made, and now, to all appearances, it is faultless. The gauges attached thereto show the pressure of steam on the boiler, the vaccuum upon the piston, and a counter for noting the number of strokes. This is an ingenious contrivance. It shows that the total number of strokes since the engine was erected was 597,650 up to about three o'clock yesterday. The cost of the engine was about $80,000.

It is said to be the most powerful engine in the world, being able to do more execution than the Lee Water engine in Holland and for draining the Harlem river.

The pumps have a ten feet stroke, with 36 and 54 inch double beat barrels. The connections are of wrought iron, 3 feet in diameter, with a capacity per stroke of 1,075 gallons, or 10,000 gallons per minute. The pumps are so constructed that the charge of one under cylinder is delivered through to outer cylinder, and when the outer pump is delivering it is taking its charge through the pump under the cylinder, thereby producing a steady flow of water and never changing the direction of the moving column. The air pump is double acting, 36 inches bore, with 5 feet stroke. The air chamber is 8 feet in diameter and 20 feet high. There are two force tubes, 3,450 feet long, each 3 feet in diameter; weight of each tube, 958 tons—with water, 620 tons. The pump load bears 72 65-100 tons to the square inch, or 38 tons on the working bucket.

Strength of Boiler Iron.

The iron of boilers like the iron of machines or structures is capable of withstanding a tensile strain of from 50,000 to 60,000 lbs. upon every square inch of section, but it will only bear a third of this strain without permanent derangement of structure, and it does not appear expedient in any boiler to let the strain exceed 4,000 lbs. upon the square inch of sectional area of metal, and 3,000 lbs. on the square inch of section, is a preferable proportion. The question of the strength of boilers was investigated very elaborately a few years ago, by a Committee of the Franklin Institute, in Philadelphia, and it was found that the tenacity of boiler plate increased with the temperature up to 550°, at which point the tenacity began to diminish. At 32° the cohesive force of a square inch of section was 56,000 lbs.; at 570° it was 66,500 lbs.; at 720°, 55,000 lbs.; at 1,050°, 32,000 lbs.; at 1,240°, 22,000 lbs.; and at 1,317°, 9,000 lbs. Copper follows a different law and appears to be diminished in strength by every addition to the temperature. At 32° the cohesion of copper was found to be 32,800 lbs. per square inch of section, which exceeds the cohesive force at any higher temperature, and the square of the diminution of strength seems to keep pace with the cube of the increased temperature. Strips of iron cut in the direction of the fiber were found to be about 6 per cent stronger than when cut across the grain. Repeated piling and welding was found to increase the tenacity of the iron, but the result of welding together different kinds of iron was not found to be favorable. The accidental overheating of a boiler was found to reduce the ultimate or maximum strength of the plates from 65,000 lbs. to 45,000 lbs. per square inch of section, and riveting the plates was found to occasion a diminution in their strength, to the extent of one-third. In some boilers, which are worked with a pressure of 80 lbs. upon the square inch, the thickness of the plates is only $\frac{5}{16}$ths of an inch, while the barrel of the boiler is 39 inches in diameter. It will require a length of 3.2 inches of the boiler when the plates are $\frac{5}{16}$ths thick to make up a sectional area of one square inch, and the separating force will be 39 times 3.2 multiplied by 80, which makes the separating force 9.984 lbs. sustained by two square inches of sectional area—one on each side; or the strain is 4,992 lbs. per square inch of sectional area, which is a greater strain than is advisable. The accession of strength derived from the boiler ends is not here taken into account, but neither is the weakening effect counted that is caused by the rivets which certainly would not be less in amount. The proper thickness for cylindrical boilers or other cylindrical vessels, exposed to an internal pressure, may be found by the following rule:—Multiply 2.54 times the internal diamater of the cylinder in inches by the greatest pressure within the cylinder per circular inch, and divide by the tensile force that the metal will bear without permanent derangement of structure, which for malleable iron is 17,800 lbs., per square inch of section; the result is the thickness in inches. Where the sides of the boiler are flat, instead of being cylindrical, a sufficient number of stays must be introduced to withstand the pressure, and it is expedient not to let the strain upon these stays be more than 3,000 lbs. per square inch of section, as the strength of internal stays in boilers is generally soon diminished by corrosion. It is expedient also that the stays should be small and numerous rather than large and few in number, as when large stays are employed it is difficult to keep them tight at the ends, and oxidation of the shell follows from leakage at the end of the stays. A strain at all approaching that upon locomotive boilers would be very unsafe in the case of marine boilers, on account of the corrosion, both internal and external, to which marine boilers are subject. All boilers should be proved when new to three or four times the pressure they are intended to bear, and they should be proved occasionally by the hand pump when in use, to detect any weakness which corrosion may have occasioned.

The singular case of the Commercial Bank, vs. Albert Stein, was to have been brought before the District Court, yesterday; but was unavoidably postponed. It is one of a singular tenor; and altho' we never wish to notice any question when *sub judice lis est*, we may briefly allude to it, as it is one of a public nature.

It is known to most of our citizens that Mr. Stein has been justly celebrated as an hydraulic engineer—having not only in his boyhood, been prominently engaged in improving the navigation of the Rhine and other waters in Europe, after he had passed with eclat thro' the college of Dusseldough; but having been advantageously known as completely successful, in erecting water-works at Richmond, and Lynchburg in Virginia, at Cincinnati, at Nashville, &c, and that his conduct and character throughout, have been irreproachable, and those of a gentleman. It is therefore, singular, that after he has continued voluntarily and gratuitously to assist and supervise the continuance and permanence, of all those and other works in which he had been engaged, he should now for the first time in his life, be accused of a dereliction of duty, when retiring as engineer of the New Orleans water-works: and doubly singular, that such an accusation should have been made by one who formerly praised him in unlimited terms, both in public and in private. But few are wise at all times.

The cause is a nominal claim of $40,000, on behalf of the Bank or its President, in consequence [as alleged,] of Stein having some memoranda or books and pipes, in his possession, after his resignation—which it is stated are necessary for the continuance of the works. This claim is less for the recovery of the alledged property, than to injure Stein in his profession, from a private pique or malice, in one of his succesors in the employment of the Bank: for all who know the circumstances, are aware that Stein has not had the direction of the pump or pipes, since last January: nor had he in possession any property in pipes, &c, belonging to that Bank—as all had been conveyed to the exclusive control of the last superintendant then appointed; and Stein could get nothing without a written order, and with much trouble and delay. A friend of ours, has seen the correspondence which passed between the parties, and is acquainted with the minutiæ of the details; and he assures us, that alth', he is disposed to do every justice to the Commercial Bank, and its President, he does not hesitate saying, that the present case is one of an intolerable and unjust nature; and that he acquiesces fully in the statement made by the engineer, of the Philadelphia, water-works. If an engineer has in his possession, any documents or materials, for which his employers have paid, they are properly entitled to them; but his employers have no right to exact from him his private memoranda, on any subject, for which they have not paid; nor have they any reason to exact from him, materials, the control of which he, either never had or had long since resigned, after giving a full settlement or inventory.

Yet, this is the gist of the litigation. Stein had involuntarily resigned the direction of the engine, and the distribution and possession of the pipes belonging to the bank, since the first of last January; and the direction of the mound or resevoir since June—as he found, that his services could no longer be available in any capacity, from the many obstacles inviduously or purposely thrown in his way. One of the first was, to fill completely and recklessly the compartments of the reservoir, before the walls or cement had been matured: so that an allegation might be made that they were badly constructed; and the bank has now to suffer from that recklessness or ignorance; but the walls and works having stood uninjured for three or four years under Stein, is a proof of their original stability, and of the ignorance of those now entrusted with their management—precisely as the present case will also redound to his credit, and the defeat, exposure and expense of his enemies. It is a pity, if not a shame, that so generally useful a public servant as he is, should thus be assailed by those, who have temporarily obtained the power to do mischief, without having the inclination to do good, where self-interest is not involved.

Three casks of gunpowder, shipped as *coffee*, were

Mr. Stein.—An article having appeared in Friday's Advertiser respecting the questions at issue between Mr. Albert Stein and the Commercial Bank, that gentleman called on us yesterday to request that we would state that no reference to, or observations on the subject in the papers, has been authorized by him. He strongly objects to any one making remarks on a matter now pending in the courts of law, which may by possibility be supposed to proceed either directly or indirectly from him: and thus publicly denies all participation in such interference. Mr. Stein is perfectly content to leave the matter in the hands of the court, and has no wish whatever to meddle with what is now submitted to a legal issue.

Reorganization of the City Government—The Octroi—General Improvements—Peculiarities of the Municipal Administration.

From Our Own Correspondent.

Paris, Thursday, Dec. 29, 1859.

The first day of the new year, so precious a holiday under ordinary circumstances, brings with it this year a sad trouble for our municipal people. At 12 o'clock on Saturday night next, Paris will acquire an augmentation in its population of more than 300,000 souls; from a city of 1,200,000 inhabitants it will suddenly become a city of more than a million and a half of inhabitants; the old octroi wall will that night disappear forever as the city limit, and the city will step out nearly a mile in its whole circumference to the fortification wall.

This change requires a complete reorganization of the City Government. From twelve Wards, or Arrondissements, the number is to be carried to twenty. The Mayors, the Magistrature, the Police, the Customs Officers, are to be largely increased, the Wards and Districts remodeled, and their officers removed. The number of employes in the various departments of the Municipal Government was already immense, and it will be doubled by the change. From this results a scramble after places that would do honor to Washington City, to say nothing of the heart-burnings and jealousies created by the promotions in the ranks of the old officers and clerks. The principal details of the new organization—the limits of each of the twenty Arrondissements, the names of the twenty Mayors and the forty adjoint Mayors, the new laws and regulations—have been published. The future city wall, which has a circumference of thirty miles, will have, if I recollect right, ninety-two gates, at which the officers for the collection of the city customs will hereafter be stationed. This part of the municipal service is more than doubled, and the new employes have been taken from among such soldiers of the army as could show the necessary education.

The ground occupied by the old octroi wall is to be converted into a continuous boulevard, and planted with several rows of trees, which will constitute it the handsomest and longest street in the world. The materials of which the old wall is constructed, including the custom-houses, have been sold out in lots to the highest bidder, and their demolition will commence at once. The ground once cleared, the city will regulate the plan of the future boulevard, and indicate to the owners of property the kind of house they may build. Including the streets which now run each side the octroi wall, the new boulevard will have perhaps a width of 150 feet, with a length, in almost a perfect circle, of eighteen miles. This boulevard already contains on the outside a population of more than three hundred thousand souls, which will hereafter rapidly increase, since, being now a part of Paris, it will be a fit residence as well for the rich as for the poor.

The octroi or customs duty charged on the entrance of articles into the city of Paris only applies to provisions, wood and coal. The duty on wine is about 8 per cent., on other articles a little lower. The customs duty thus collected this year by the municipality of Paris will be nearly eight millions of dollars; after the extension of the city limits, perhaps, ten millions of dollars. The expenses of collection are about half a million of dollars. This immense sum, derived from one source of revenue alone, goes far toward maintaining the admirable system of municipal government which has made of Paris the model city in this respect. The tax on houses is also the source of an enormous revenue. Thus, for example, while a suite of rooms rented in a house for a residence, at say 8,000 francs, will pay about 1,000 francs tax to the Government, a store-room, rented at say 5,000, will pay, including the patent or license, the same amount of tax. The tenants pay these taxes, but there is yet the ground tax, which is paid by the proprietor. The taxes are collected in one mass, the Government making no distinction between the State and municipal taxes, so far as the payer is concerned. The division is afterwards made by the officers of the two administrations.

A curious question of jurisprudence has arisen in connection with the change of the *octroi* wall. The people living between the old and the new wall—that is to say, in the annexed district—have been accumulating for some time great quantities of wine and other articles subject to city tax, with a view of being provided for years after they are annexed to the city with articles that have escaped the *octroi*. More than this, immense purchases have been made on speculation, and carried into the *banliene*, (as the to-be-annexed district is called,) there to remain on storage until the annexation takes place. The whole *banliene*, in fact, is said to be glutted with provisions awaiting this event. This evasion of the law has awakened the attention of the authorities, but there seems to be no remedy for it. The city revenue will be largely diminished the first year by this ingenious dodge of the law.

By the aggrandizement of the city about to take place, the Prefect of the Seine will become a Governor of the first class, an *executive* officer next in power and in the extent of his administration to the Emperer himself; for although M. Haussemann already had the control of the entire Department of the Seine, including Paris and several miles of the environs, he has been clothed with powers he did not previously possess. Among other extensions of his power, all the employes in the bureaux of the twenty Mayors, even to the office-boys, are to be named by the Prefect. Ever since M. Haussemann has been in office in fact he has by degrees been centralizing the power of the Department in his own hands, until now he is even more absolute in the government of the city than is the Emperor in the government of the State. Fortunately, this despotic power could not be in abler hands; there is not in all France a better administrative officer than the Baron Haussemann, and it is precisely on account of his remarkable talent, and great industry, that he has been permitted thus to accumulate so much power in his own hands. The Mayors, the Common Council and the Prefect of Police to a less degree are mere tools in his hands, or rather cloaks to his despotism, as are the legislative bodies, so-called, to the despotism of the Emperor. So long, however, as the city affairs are conducted as they are at present, the people will not complain of this one-man power.

The year the Empire was declared, 1852, the revenues of the City of Paris gave a total of ten millions and a half of dollars; last year, that is to say, six years later on, the total receipts were sixteen millions of dollars. And yet the year 1852 was the year that saw inaugurated those gigantic schemes for the embellishment and the aggrandizement of the town. The astonishing thing is, that notwithstanding the extent of public improvements commenced, in progress or finished, since that period, the authorities have not been obliged to increase the revenue beyond the sum indicated above.

It is a source of constant astonishment to strangers—to Americans especially—how such immense improvements can be carried on the whole year round without increasing the city taxes to an absolutely ruinous figure. The explanation is not difficult. The municipality expropriates, "in the interest of the public," in a straight line through any part of the city it pleases, the ground necessary for a wide street. The expropriated property is paid for at a price agreed on by the two parties if possible, but generally by arbitrators, for the one party generally too little, the other always asks too much. These new thoroughfares are always, or nearly always, opened up through the most populous parts of the city, where there exist but narrow and tortuous streets and alleys, where there are no gardens to the houses, and where every foot of available ground bears on it stone buildings, six, seven and eight stories high. Moreover, the Government extends its expropriations on each side of the new street, far enough to permit of the erection of buildings fronting the street, on models approved by the authorities.

The reader will have already divined how it is that these magnificent improvements do not take much money out of the treasury. 1. The expropriated ground not used for the roadway is resold to the city at an immense advance on the previous value—for nearly enough, in fact, to cover the ground used in the roadway. 2. French houses, being all built of large blocks of hewn stone, are nearly as valuable demolished as standing, and the expropriated houses are sold by the city to "undertakers of demolitions" in lots, the purchasers being obliged to clear the ground, ready for the city workmen to lay down the roadway. After this come the sewers, the gas lamps and the ornamental trees—three items against which there is no set-off, and which cost, in fact, a handsome sum.

The roadway of all the new streets is macadamized, for two reasons: First, because the paved roadway offers a ready and most effective material in the building of barricades, and, second, because the macadam makes but little noise. To prevent dust it is sprinkled every hour of the whole year if necessary. The pavements for foot passengers are all laid with asphaltum, by the proprietors, under the direction of the city engineers.

A new asphaltum has come into use within a year which is now, I believe, exclusively employed, and which is called dry asphaltum. Fine gravel is mixed with the bitumen while melting, in such quantities as to thicken the mixture to the plastic point, and it is thus laid down and then rolled with iron cylinders of several feet diameter. Some of the asphaltum, laid down in the roadway around the Palais Royal about a year ago, is to-day in a perfect state of preservation, notwithstanding the immense number of carriages and wagons of all kinds which pass over it. The system will be tried further as a substitute for the paving stones in the roadway. This system might possibly be useful in the United States, for, being much harder than the liquid asphaltum, it would require a hotter sun than that of New-York to soften it and to receive impressions from the wheels of wagons. The greatest difficulty would arise from the hard freezes and subsequent thaws; but this difficulty might be obviated by the sub-structure. The great advantages of this kind of roadway are obvious; it makes neither noise nor dust, and is almost without expense in the keeping up.

But there is a French municipal law—I do not know whether it exists in any other city in the world—prohibiting corks on horses' shoes. That is to say, there is a heavy tax on corks—so heavy that their use is limited to the carriage horses of the wealthy class; all others, including omnibus and public hack horses, are entirely without this useful adjunct to locomotion. It is a great cruelty to the chevaline race, but it is a wonderful conservator of the city roadways. Moreover, it prevents the rapid driving which is so characteristic and so dangerous a feature of the streets of London and New-York.

There is a word to be said in regard to sprinkling of the streets. The contract here is not made to sprinkle the streets so many times per day—the contractor is simply bound *to keep the dust down*, and wo to him if, in the course of a month, a policeman or any other agent of the authorities sees more than one cloud of dust in his district; a report to head-quarters is immediately made, and if he is not discharged for the first offence, he is sure of receiving this penalty for the second. We thus, in Paris, enjoy as nearly a complete immunity from dust as it is possible.

The new regulation for the height of houses in Paris is as follows: For a street under 7 meters 80 centimeters in width—say 22 feet—the houses cannot be higher than 11 meters 70 centimeters—say 37 feet; for streets under 7 meters 80 centimeters, the houses cannot exceed 14.60; and for streets of 9.75 and over, the houses cannot exceed 17.55—the greatest height allowed.

The Census of 1860.

The Free and Slave Populations of the United States.

FREE STATES.

	1850.	1860.	Inc'se.
Maine	583,169	619,958	36,789
New Hampshire	317,976	326,072	8,096
Vermont	314,120	325,827	10,707
Massachusetts	994,514	1,231,494	236,980
Rhode Island	147,545	174,721	27,076
Connecticut	370,972	463,670	89,698
New York	3,097,394	3,851,563	754,169
Pennsylvania	2,311,786	2,916,018	604,232
New Jersey	489,555	676,034	186,479
Ohio	1,980,329	2,377,917	397,588
Indiana	988,416	1,350,802	362,386
Illinois	851,470	1,691,238	839,768
Michigan	397,654	754,291	356,737
Wisconsin	305,391	763,485	458,094
Iowa	192,214	682,002	489,788
Minnesota	6,077	172,796	166,719
Oregon	13,294	52,566	39,272
California	92,597	384,770	292,173
Total	13,454,473	18,802,124	5,347,651

SLAVE STATES.

	1850.	1860.	Inc'se.
Delaware	91,532	112,353	20,821
Maryland	583,034	731,565	148,531
Virginia	1,421,661	1,593,199	171,538
North Carolina	869,039	1,008,342	139,303
South Carolina	668,507	715,371	46,864
Georgia	906,185	1,082,827	176,642
Florida	87,445	145,694	58,249
Alabama	771,623	955,917	184,294
Mississippi	606,526	886,658	280,132
Louisiana	517,762	666,431	148,669
Arkansas	209,897	440,775	230,878
Texas	212,592	600,955	488,363
Tennessee	1,002,717	1,146,690	133,973
Kentucky	982,405	1,145,567	163,152
Missouri	682,044	1,201,214	519,170
Total	9,612,969	12,433,508	2,820,539

TERRITORIES, &C.

	1850.	1860.
Kansas	——	143,645
Nebraska	——	28,892
New Mexico	61,547	93,024
Utah	11,380	49,000
Dacotah	——	4,839
Washington	——	11,624
Dis. of Columbia	51,687	75,321
Total	124,614	406,345

RECAPITULATION.

	1850.	1860.	Increase.
Free States	13,454,473	18,302,124	5,317,651
Slave States	9,612,969	12,433,508	2,820,539
Territories, &c.	124,614	406,345	381,731
Total	23,192,056	31,641,977	8,449,921

The following table shows the proportion of slave to free population in the different States in 1850 and 1860:

	1850.		1860.	
	Free.	Slave.	Free.	Slave.
Delaware	89,242	2,290	110,548	1,805
Maryland	492,666	90,368	646,183	85,382
Virginia	949,133	472,528	1,097,373	495,826
N. Carolina	580,491	288,548	679,965	328,377
S. Carolina	283,523	374,984	308,186	407,185
Georgia	524,503	381,682	615,366	467,461
Florida	48,135	39,309	81,885	63,809
Alabama	428,731	342,892	520,444	435,473
Mississippi	296,648	309,878	407,051	479,607
Louisiana	272,953	244,809	354,245	312,186
Arkansas	162,797	47,100	331,710	109,065
Texas	154,431	58,161	415,999	184,956
Tennessee	763,154	239,460	859,578	287,112
Kentucky	771,424	210,981	950,077	225,490
Missouri	594,622	87,422	1,085,595	115,619
Total	6,412,453	3,200,412	8,434,155	3,999,353

The Sarcophagus.

On Wednesday, we noted the arrival in this city, *en route* to Lexington, Ky., of the beautiful marble sarcophagus intended for the remains of Henry Clay, manufatured by Mr. Struthers, of Philadelphia, and designed by Mr. Frederick Graeff, of that city. The material used, which is pure white marble, is from a quarry in Montgomery County. On the raised lid, encircled in the laurel wreath, is the name—Henry Clay—in black marble letters; on the end, in front of the base, the following: "Presented by William Struther, Marble Mason, Philadelphia." The inscriptions on the side of the base are from Clay's speeches. One, "I had rather be right than President;" "Truth is mighty and Public Justice certain." Again: "I can, with unshaken confidence, appeal to the Divine Arbiter for the truth of the declaration that I have been influenced by no impure purpose, no personal motive; have sought no personal aggrandizement, but in all my public acts I have had a sole and single eye, and a warm and devoted heart, directed and dedicated to what, in my best judgment, I believed to be the true interests of my country."

Adams Express took charge of the sarcophagus at this point and will convey it hence to its destination gratis.—[Pittsburgh Jour., Friday.

The enlargement of the city by the annexation of the *bauliene*, is going to require a new map for the use of the city engineers in laying out new streets, in building sewers, &c. To accomplish this in an absolutely exact manner, twenty observatories have been built at different points in the city and environs, high enough to overlook the house-tops and to be within complete view of one another. From these points of observation a correct triangulation of the city can be made, and from this triangulation the engineers will construct trigonometrical maps of immense utility to themselves, and of great interest to the public. The expense will be considerable, but such a map was absolutely indispensable to the authorities. These observatories, constructed of open scaffolding, with ladders all the way up the interior, are an unsightly object on the public places, and intrigue no little the curiosity of newly arrived strangers.

MALAKOFF.

The Census of Philadelphia and the Counties composing the Eastern District of Pennsylvania.—The census of Philadelphia, as well as the counties composing the Eastern District of Pennsylvania, has been completed, and from the official returns we have compiled the following—showing the number of inhabitants, dwellings, manufacturing establishments and farms, as well as the aggregate number of deaths in each county for one year, ending the 1st of June last. The list of dwellings only includes such buildings as are occupied by families; stores and buildings for manufacturing purposes being excluded. The population of Philadelphia shows a handsome increase over the census of 1850. The large increase in the number of dwellings exhibits the fact that our city is spreading with great rapidity, and that, unlike New York, the larger number of our inhabitants occupy entire dwellings, and are not crowded into miserable, unventilated rooms. This is one of the great causes which render Philadelphia one of the healthiest cities in the Union. The capital invested in manufactures in the city is not yet made public. Marshal Yost did not consider himself authorized to give such particulars for publication. The census of Philadelphia city is as follows:

The returns represent the number of deaths for the year ending June last to be 6980. This is a strange error, the actual number being about 10,000, as returned at the Health Office from week to week. The census number is not larger than the deaths returned in the census of 1850.

Wards.	Population.	Dwellings.	Manuf. Estab.
First Ward,	30,963	5,493	94
Second,	29,212	4,950	48
Third,	19,976	3,218	46
Fourth,	23,633	3,691	27
Fifth,	24,858	2,674	427
Sixth,	14,928	1,814	639
Seventh,	31,397	4,670	110
Eighth,	27,811	3,461	68
Ninth,	17,245	2,389	236
Tenth,	21,967	3,561	153
Eleventh,	16,717	2,535	387
Twelfth,	16,811	2,341	81
Thirteenth,	20,132	3,394	170
Fourteenth,	24,336	3,954	210
Fifteenth,	32,431	5,131	187
Sixteenth,	20,092	3,454	286
Seventeenth,	23,328	3,927	190
Eighteenth,	20,480	3,563	116
Nineteenth,	39,271	6,714	376
Twentieth,	30,152	[illegible]	109
Twenty first,	17,164	2,947	73
Twenty-second,	17,286	[illegible]	111
Twenty-third,	24,093	4,161	97
Twenty-fourth,	23,781	3,448	87
Population,	568,034	89,978	[illegible]
In 1850,	408,762	61,278	
Increase,	159,272	28,700	

The population of the several counties of the eastern section of the State is as follows:

Counties.	No. Inhabitants	Deaths	Farms	Industrials.	Dwellings
Adams,	27,997	494	2182	180	5012
Berks,	[illegible]	1251	2831	647	[illegible]
Bucks,	63,803	[illegible]	5786	573	11,989
Carbon,	21,239	235	409	94	[illegible]
Chester,	74,749	834	5123	666	13,756
Cumberland,	40,402	[illegible]	2183	318	7293
Dauphin,	46,640	466	2428	324	8226
Delaware,	30,614	373	1629	217	5546
Franklin,	42,242	447	[illegible]	325	7575
Lancaster,	116,621	[illegible]	6721	985	20,521
Lebanon,	[illegible]	310	1783	221	5876
Lehigh,	43,932	665	2731	464	[illegible]
Monroe,	[illegible]	164	970	81	2829
Montgomery,	70,494	706	[illegible]	609	12,330
Northampton,	47,775	380	[illegible]	251	8954
Philada. co'y.	568,034	6979	1731	4400	89,978
Pike,	7,360	64	544	43	1318
Perry,	22,940	216	1716	174	[illegible]
Schuylkill,	90,173	[illegible]	2257	579	[illegible]
Wayne,	[illegible]	183	[illegible]	336	5727
York,	68,188	820	[illegible]	673	11,273
	1,558,153	17,172	62,398	12,149	267,390

Statement of Exports from Philadelphia to

Dimensions of the Principal European Churches.—The Roman Advertiser, in an article compiled to show the impossibility of St. Peter's, at Rome, being ever crowded, gives some curious statistics as the comparative capacity of the most celebrated churches in Europe. We add a column, exhibiting the number of square yards. "Those who attended at St Peter's during the august ceremonies of Christmas Day might, perhaps, have imagined that temple, in all parts open to the public during the function, as much crowded as possible. To show the impossibility of St. Peter's being ever crowded, we annex the following statistics of its capabilities as compared with other great churches, allowing four persons to every quadrate meter (square yard):

	Persons.	Sq. yds.
St. Peter's,	54,000	13,500
Milan Cathedral,	37,000	9,250
St. Paul's at Rome,	32,000	8,000
St. Paul's at London,	25,600	6,100
St Petronio, at Bologna,	24,400	6,100
Florence Cathedral,	24,300	6,075
Antwerp Cathedral,	24,000	6,000
St. Sophia's, Constantinople,	23,000	5,750
St. John Laterean,	22,900	5,725
Notre Dame, at Paris,	21,000	5,250
Pisa Cathedral,	13,000	3,250
St. Stephen's, at Vienna,	12,400	3,100
St. Dominic's, at Bologna,	12,000	3,000
St. Peter's, at Bologna,	11,400	2,850
Cathedral of Sienna,	11,000	2,750
St. Mark's, Venice,	7,000	1,750

The piazza of St. Peter's, in its widest limits allowing 12 persons to the quadrate metre (sq. yard), holds 624,000; allowing four to the same, drawn up in military array, 202,000. In its narrowest limits, not comprising the porticos or the Piazza Rusticucci, 474,000 crowded and 138,000 in military array to the quadrate meter."—[*Agra Weekly Register.*

146

THE OTHER SIDE OF THE QUESTION.—A great deal has been said about the discharge of two engineers by the chief Engineer of the Water Works, Mr. Birkenbine. Mr. Birkenbine justifies his action on the ground that he has since obtained more competent men. A good deal of trouble was originated in the refusal of Mr. Birkenbine to permit Mr. Barry, one of the disaffected engineers, to keep a cake shop in Fairmount hall, a privilege for which, if sold, the sum of $1500 could easily be obtained. Mr. Barry invented an airing machine of considerable merit, if put in the right place. It was placed on the valves by Mr. Barry, instead of the air-chamber, where it should have been, and was removed by Mr. Birkenbine in consequence. Mr. Birkenbine asserts that, taking offence at this, Mr. Barry, from that time, lost no opportunity to misrepresent every official act of the chief Engineer, for which he was removed. After his removal he preferred a series of charges against Mr. Birkenbine, which the committee at once saw were frivolous, and refused to entertain. Mr. Barry, it is further alleged, rendered himself obnoxious because he kept a number of boarders in the Engineer's house, and paid about as much attention to spiritualism as he did to his business.

The other man, Garrett, by following the example of Barry, in many things, rendered himself amenable to censure, and was dismissed for open insubordination, and an inability to restrict his attention to the business for which he was paid.

In reply to the resolution of Councils, requesting the reinstatement of these engineers, the chief Engineer sends to Councils the following:

PHILADELPHIA, Sept 15, 1859.

To the Common Council of the City of Philadelphia: Gentlemen—In reply to your "resolution" of the 8th instant, I would say that it would afford me great pleasure to oblige so many of your honorable body by reinstating the two "enginemen" discharged from Fairmount Works, who have drawn so largely upon your sympathies, could it be done without prejudicing the interest of the "Department" you have entrusted to my care, and without injustice to those now filling the positions, who are much better qualified and willing to perform the duties assigned them; but as they were discharged for what appeared to me good and sufficient reasons, I cannot do so without being recreant to my duty and the interest of the city. I must, therefore, most respectfully decline reinstating them.

While every appointment made by me in the Department has been upon the recommendation of members of Councils, with but two exceptions, I cannot consider such recommendations as an excuse for any dereliction of duty, no matter how influential the parties recommending them may be.

It is due to those filling responsible positions under me in the "Department," to state that these two are the only removals it has been found necessary to make, and I am pleased to bear testimony to the energy and interest which all the officers manifest in the discharge of their duties. This is apparent in the greatly increased revenue, the abundant supply of water wherever the mains could vent it, and the fact that no complaints have come to your honorable body, either as regards the quantity or quality of the water supplied since the present organization of the Department. I flatter myself that you will also find, at the end of the year, that the most rigid economy and care have been practised throughout the Department.

The course of the committee, asking for the passage of this resolution, I cannot but regret. The Chairman some time since offered a "Joint Resolution," asking for certain information from me. This was passed by you, and also by Select Council, with an "amendment," and it is now before your chamber, awaiting your final action. As this resolution requires me to impart to Councils my reasons for the discharge of the two enginemen from Fairmount Works, I had hoped that, by its passage, you would permit me to communicate my reasons to you. I cannot see why it was necessary for the Chairman to press his report upon you at your first meeting, while the resolution originating with himself was still pending before your Chamber.

It is important that one occupying the responsible position in which it has pleased you to place me, and entrusted with the management and keeping of an interest of such magnitude as the Water Department, should be above suspicion. I would, therefore, most respectfully ask that if any of your honorable body entertain the idea that I have in any instance been unfaithful to the interests of the city, direct and specific charges should be made, and a thorough investigation entered into, of all my transactions, by a "joint committee of Councils." This is due to yourselves, to the Water Committee, and to the honor of the city you represent, as well as myself. I am willing that any and all of my official acts may be most thoroughly scrutinized. I am conscious of being influenced by no other motive than a desire to promote the best interests of the Department which you have placed me in charge of.

Respectfully, yours, HENRY M. BIRKENBINE,
Chief Engineer Water Department.

The Addition to Fairmount Park.

The following petition for the extension of Fairmount Park, by adding the west bank of the Schuylkill, from the Wire Bridge to a point on the river above the Girard Avenue Bridge, was presented to Councils on Thursday. The petition is signed by several hundreds of our heaviest taxpayers. We append the names of a few of the signers.

To the Select and Common Councils of the City of Philadelphia.

The undersigned, citizens of Philadelphia, respectfully represent, that in view of the importance of supplying our citizens with drinking water as pure as our utmost care and foresight may be able to furnish, they are convinced that the shores of the Schuylkill around the forebay, to a point above the present works, should be secured and preserved from buildings, whose drainage must necessarily flow into the dam, and that the rapid increase of our city has rendered present action in this respect necessary.

Two years ago there were no buildings of value upon the west bank; since that time a manufactory has been erected on the shore, whose refuse matter pours into the river. This will be followed by others, and the property, which may now be secured as unimproved ground, can at a future day be only purchased at a greatly increased cost, and with the increased difficulties attendant upon constant subdivisions among numerous owners.

The water of other large cities has at times been the cause of just alarm. Our own has hitherto been comparatively pure. It can hardly be necessary to urge upon Councils the securing of the purity of that basin from which we draw health and happiness, or disease and death, or to urge on them the importance of securing it before the effects of neglect will be too glaring, and the acquisition of the ground require complicated negotiations, and a largely increased expenditure by the city.

In connection, also, with Fairmount Park, an improvement second only in importance to the preservation of the water, the acquisition of the west bank, which now alone remains to be secured, is *essential*, and we should greatly deplore that inaction which would eventually mar a spot now rapidly unfolding beauties which must render Philadelphia superior in this respect to other cities. The vast importance of these objects to the well-being of our city compels us, therefore, to ask of Councils the adoption of such measures as will at the earliest period secure them.

M. W. Baldwin,
Charles Macalester,
Robert Pearsall,
Henry Cope,
Alfred Cope,
Thomas Williamson,
Thomas Ridgway,
James Page,
Isaac Elliott,
Algernon S. Roberts,
George H. Stuart,
N. B. Browne,
Wm. Shippen, M. D.,
Andrew M. Jones,
Asa Whitney,
G. Emerson, M. D.,
Samuel H. Perkins,
Horace Binney, Jr.,
Thomas Mellon,
Joseph Harrison,
David Gilbert, M. D.,
Andrew D. Cash,
John Jordan, Jr.,
F. A. Comly,
Wm. H. Newbold,
Henry Seybert,
James Dundas,
Joseph Swift,
I. Pemberton Hutchinson
Fairman Rogers,
Robert Smith,
Wm. Byrd Page, M. D.,
Charles Dutilh,
Lemuel Coffin,
Thomas A. Biddle,
Ephraim Clark, Jr.,
Paul B. Goddard, M. D.,
Charles Blight,
Wm. Chancellor,
Charles P. Fox,
John A. Barclay,
Joshua Lippincott,
John Jay Smith,
H. L. Fassitt,
Hiram Miller,
Evans Rogers,
Horace Binney,
John Lambert,
Charles Perot,
Henry C. Blair,
Wm. B. Fling,
Henry D. Gilpin,
Henry M. Watts,
J. G. Fell,
Frederic Graff,
G. D. Rosengarten,
W. A. Blanchard,
S. W. Thackara,
B. F. Huddy,
John Grigg,
Israel Pemberton,
Thomas Sparks,
Charles J. Biddle,
Franklin Bache,
Thomas McEwen,
S. Morris Waln,
Wm. S. Wilson,
S. W. Roberts,
William Wister,
Thomas T. Tasker, Sr.,
David Jayne,
George Cadwalader,
Samuel Jones,
John Welsh,
Samuel Welsh,
Wm. Welsh,
A. E. Borie,
Charles Henry Fisher,
Wm. H. Hart,
M. D. Lewis,
Lewis Waln,
Isaac P. Morris,
Wm. B. Reed,
Charles Massey, Jr.,
Thomas Robins,
T. M. Bryan,
Samuel W. Paul,
James L. Claghorn,
S. B. Barcroft,
John B. Myers.

[For the Evening National Argus.]

I would call the attention of the tax paying community (for Councils will not notice it,) that sealed proposals were received for furnishing the water department with 1260 lengths of 30 inch pipe, 12 feet long, weighing from 3850 to 4160 pounds each, delivered—no pipe received less than the above weight, nor no allowance to be made for any weight exceeding the above weight—an average of 4005 pounds each. The contract was taken at $35 per ton of 2240 pounds—say about 2252 tons at $35 per ton—$78,820 00, or $5 21½ per foot of pipe. The pipe will lay 11 feet 6 inches each, a loss of about 4 per cent.; 1 length of pipe 12 feet long at $5 21½ per feet, $62 56

The average depth of trench, 8 feet 6 inches; width 5 feet 6 inches; length 11 feet 6 inches, or 19½ cubic yards of digging, at 25 cents per cubic yard for digging and filling,	$4 87½
75 pounds of lead per joint at 6½ cents per pound (melted and wastage,)	4 87½
Time, making joint and gasket per joint,	62½
Placing the pipe in trench, each,	50
Hauling per ton, at 50 cents,	94
Repaving and clearing up street 8 yards, 25 cents,	2 00
For sharpening tools, cutting under railroads, &c.,	75
	$14 56½
Total each pipe.	$77 12½
1260 lengths at $77 12½ each, laid,	$97,177 50

The above is a fair estimate for the work. There is no railroad tracks to cut under (except one) north of Willow street or south of Catherine street, and several square of streets between those points are exempt of tracks. The digging as well as the weather has been as good as could be expected for the speedy accomplishment of the work.

But this 30 inch main will cost the tax-paying community from 30 to 40,000 dollars more than the above estimate, and in place of having the work finished as rapidly as it should have been, you may expect to see another gang of men (as it is near the election) engaged on the lower end of Broad street. It must be all right as the *whole* work is being done under the indefatigable Chief Engineer, "Birkenbine."

Respectfully yours, AQUA.

The West Philadelphia Water Works.—For some time past the Chief Engineer of the Water Works, has been engaged in putting in order the Water Works in the 24th Ward, so as to keep up a full supply of water in that portion of the city. New valves have been placed in the pumps and in the ascending main, in lieu of those which were broken and in a few days the whole work will be completed. To effect these repairs, the stand pipe would be filled during the day, and then the works stopped during the night for repairs. June 4/57

Steam Fire Engine Delaware.—On Wednesday

Difficulties at the Water Works.

EDITORS OF SUNDAY TRANSCRIPT:—As the public are deeply interested in all that pertains to furnishing them with that necessary element—water, I need offer no apology for asking a few lines in your valuable sheet, to make a statement of a few facts of importance at the present time, leaving the matter for an intelligent and impartial public to draw their own conclusions. On Friday last, two of the *air vessels* connected with the pumps at Fairmount Works were burst, making the pumps, for the time being, a perfect wreck. Now, as some weeks must necessarily elapse before they can be repaired, there will of necessity be a scarcity of water in the lower portion of the city, as *all* of the pumps are requisite, at this season of the year, to keep up a proper supply. The public will naturally ask, how and why is this? And as Mr. Birkinbine is at the present time perplexed by a number of *very delicate and intricate questions*, and as I have until recently occupied a position that has enabled me to become posted in this matter, I will, with his permission, relieve him of the disagreeable task of answering this last. Be it known, therefore, that the burst of the air-vessels above alluded was occasioned by the running of the wheels when the pumps were not in a fit condition to run for the want of air in the air-vessels. And as Mr. Birkinbine has, to my positive knowledge, given no rules or orders for the management of the Works, the matter is left wholly to the discretion of the irresponsible employees about the Works, and if they should *happen* to be reckless, incompetent, or indolent, a breakage such as has happened must be the inevitable consequence.

Since my connection with the Water Works, which ceased last April, Mr. Garret (who was also an engineer for seven years under Mr Graeff) has performed his own duties and the most disagreeable and laborious part of the other engineers, and had he not have done so, all of the pumps would have been in the condition that No. 3 and 4 are at present, and the whole works would have been a perfect wreck. As the other engineer did not and would not air the pumps for three months, asserting that they did not need it, notwithstanding experience ever since the works have been in existence demonstrated that the air vessels, at this time of year, require replenishing every week.

Now, though Mr. Garrett has been discharged scarcely three weeks for simply testifying to the truth, the legitimate consequences of incompetency and recklessness are being manifested. But who will the public hold responsible?

Last winter the turbine wheel was rendered useless for two months and two of the breast wheels on a pump seriously injured by the recklessness of the same party, who seems to be the special pet of Mr. Birkinbine. On that occasion the farce of suspending him was enacted, until a self-constituted committee, performed the necessary whitewashing, and he was reinstated. A similar committee can no doubt perform a similar service at the present time, if indeed their services will now be required. Now I wish to say that, inasmuch as I was discharged from the situation of Engineer at Fairmount Water Works, mainly on account of my having invented a *self-acting driving apparatus*, which would effectually have prevented what has now happened, (had it been in use,) even though the engineers were reckless, incompetent or indolent.

And inasmuch as the public will now have to pay for the folly of Mr. Birkinbine, and suffer beside the inconvenience of a scarcity of water; and inasmuch as an enlightened public opinion, as expressed through the press, has obliged him to retract his fanatical edict and let the fountains at Fair Mount play on Sunday, thus preventing him from carrying out his cherished idea of closing the Park altogether on that day, I feel satisfied that the same intelligent public will hold Mr. Birkinbine to a strict accountability for his actions, and render eventually a just verdict. Yours respectfully,

JOB R. BARRY,
Late an Engineer at Fair Mount.

I cheerfully concur in the above as a truthful statement of facts. W. GARRETT,
Late Engineer at Fair Mount Works.

Transcript July 31/57

[For the Public Ledger.]

The Fairmount Water-works.

MESSRS. EDITORS—In your paper of Monday last, you notice the fact that there is about to be erected at Fairmount a new building for Turbine wheels, which are said to be needed to increase the capacity of the water. Now, while I do not deny the necessity which exists for increasing the means of supply, I do deny that there is any necessity for erecting new buildings, and thus marring the beauty of that portion of the grounds which extends out to the head of the dam. All that is really needed is to remove, by degrees, the clumsy old wooden wheels at present in use, and to replace them by Turbines, which would occupy only about one third the space, and would give more than the required increase of supply. This course seems so simple and apparent, that I cannot conceive of the motive which prompts this unnecessary outlay of money in the erection of new buildings. To make the change still more annoying, they have set to work to quarrying away the rocks around the basin, which formed one of the most beautiful ornaments of the place, just at the time that the public were led to believe that Fairmount was to be adorned with an ornamental Park, and when Councils are expending money for that purpose. Of course, it saves the cost of stone, but this mode of spending money in unnecessary buildings and saving the price of the stone, is, I take it, a good exemplification of our time-honored policy of "saving at the spigot and letting out at the BUNG."

JOHN L. COLIN, Sec'y. se20-3t*659

☞ THE WATER DEPARTMENT.—The Chief Engineer of the Water Department, Mr. H. P. M. Birkenbine, has published in the North American his communication to Councils, declining to comply with their request to reinstate Job R. Barry and Washington Garrett, and has prefaced it with an article to which we wish to call the attention of the numerous readers of the Ledger.

In his introduction Mr. Birkenbine specifies the reasons which induced him to remove Mr. Barry, as follows—

"That he has *since* obtained more competent men."

"Mr. Barry desired to keep a cake shop."

"After the removal of his airing apparatus he lost no opportunity of misrepresenting every act of the Chief Engineer, and was removed in consequence."

"Mr. Barry made himself obnoxious by keeping boarders in his house."

"He paid about as much attention to Spiritualism as he did to his business."

Mr. Birkenbine, in this communication, shows how prolific he is of resources. Failing to sustain himself by the trumped up charges assigned before the Committee of Councils which investigated Mr. Barry's case, he now originates a second condition, many of which are entirely new, in the hope of shielding himself from the censure of Councils and an indignant public, by *other* reasons for the removal of faithful and efficient public servants—some of which, however, approximate much nearer the truth than those given to the Committee, and which were pronounced by them in a unanimous report to be ridiculously frivolous, maliciously wicked, and utterly unfounded.

Mr. Burkenbine told the *Committee* he removed Mr. Barry, first, "Because there was no need of a third engineer;" second, "he wished to keep a cake-shop in his house;" third, "he appropriated the property of the city to his own use." These were *all* the reasons assigned for his removal; which, if true, would have been sufficient. But, unfortunately for Mr. Burkenbine, they were all proved to be false, and only presented by him for the purpose of enabling him to withhold the real reasons, which he was afraid or ashamed to publish.

He now asserts he removed him, first, "because he has *since* obtained men more competent;" second, "he lost no opportunity of misrepresenting the acts of the Chief Engineer;" third, "he paid too much attention to Spiritualism."

If these were the causes which prompted the Chief Engineer to remove Mr. Barry, why did he not say so to the Committee, instead of presenting a string of false and unfounded charges, to sustain which he was unable to adduce a particle of testimony, and which he was not willing to support by his oath?

Mr. Birkenbine admits that Mr. Barry invented an airing machine of "considerable merit" if put in the right place. But he (Barry) placed it on the valves, instead of on the air-chamber.

The fact is that Mr. Barry's airing apparatus was entirely successful as constructed and placed by him. So much so, that the expense and labor of airing the pumps was saved from December to April, when it was removed by Mr. Birkenbine, to make room for one of his own invention, (if this term can be properly applied to that which has proved to be an entire failure.)

The machine of Mr. Burkenbine proved a complete abortion, and in the hands of his "more competent men," who took the places of Messrs. Barry and Garrett, resulted in the explosion of Pumps No. 3 and 4 about two weeks after Mr Garrett's discharge, at an expense to the city for their repair of a sum about equivalent to the salaries of three practical men for an entire year. The removal of Messrs. Barry and Garrett, and the substitution of Birkenbine's abortion for Barry's efficient self-acting airing apparatus, was the sole cause of this damage to the Fairmount Works—Mr. Burkenbine's "more competent men" being totally incompetent to discharge the duties which Mr. Garrett had performed for upwards of seven years without a single accident.

The second count in Mr. Birkenbine's second series of charges is that Mr. Barry desired to keep a cake shop. Mr. Barry, as an equivalent for some privileges which the Watering Committee desired to avail themselves of in his house, proposed that they should grant him the liberty to open an ice-cream saloon; but that he ever pressed the matter upon either Mr. Birkenbine or the Committee is entirely false, and for the truth of this assertion he confidently appeals to the *independent* members of that committee.

Of course, he cannot expect those members of the committee who are under obligations to Mr. Birkenbine to sustain him in anything he may say prejudicial to the cause of their benefactor. He will not refer his case to Mr. Bobb, who has two or more sons nicely provided for by Mr. Birkenbine in the Water Department, nor to Mr. Parker, whose nephew is one of the "more competent men," protected by him, nor to Mr. Cornman, his payed Attorney; but to either and all others on that committee to say whether he persisted in opening a saloon, or annoyed them in any way on that or any other subject.

Again, Mr. Birkenbine charges Mr. Barry with keeping boarders. For those who can condemn a son in the fulfilment of his filial obligations, for opening his house to his aged and indigent parents, we have no arguments or explanations. We have always supposed that religious bigotry and intolerance was at the bottom of this whole business; but we scarcely believed that the Chief Engineer possessed sufficient courage to avow in the face of the people of Philadelphia, that unless those dependant upon him for place conformed their religious views to suit his religious dogmas they would be deprived of their situations, and the bread taken out of the mouths of their wives and children. But such seems to be the case. Mr. Barry "paid attention to Spiritualism" instead of attending Mr. Chief Engineer Birkenbine's church, and is, therefore, unfit to serve the city.

It was proven before the Committee, that he attended to his duties as an engineer. Mr. Birkenbine did not assign inattention or incapacity as one of the causes of his removal, when before the committee. The works were successfully conducted during all the time he had them in charge; so that his religious opinions in no way interfered with his duties to the city, and yet his religious opinions were the cause of his removal—so says Mr. Birkenbine in the North American, Sept. 17th, 1859. Had he attended Mr. Birkenbine's church or had he spent one, two or three hours in prayer, according to the Chief Engineer's approved form, he would no doubt have tolerated it, although the worshiper might have entrenched somewhat on the rights of the city.

Mr. Barry is not the only person that has been removed by the Chief Engineer because he was not considered orthodox on the subject of Religion.

The hypocritical pharisaism which would stop the fountains on Sunday, and close the park gates against the people, in order to commend itself to the sincere and honest religious sentiment of the country is in the case of Mr. Birkenbine, also made a political power, which is to prostrate all those who dare to sustain the people in their right to worship God according to the dictates of their consciences, and consummate ultimately the unnatural union of Church and State. Let those who are in favor of religious freedom be watchful. "Eternal vigilance, is the price of Liberty." [*622] EQUITY.

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stated.

A New Idea.—The Chief Engineer of the
Department is now making arrangements a
culations so as to ascertain the amount of
used at the fires which may occur in the c
the purpose of calling the attention of Cou
the necessity of taxing the insurance com
from $8000 to $10,000 per year. There are 2
plugs in the city to be kept in order by the
Department; and, in addition to this, the ci
about $50,000 annually to fire companies, w
the property belonging to the city is insur
consequently the insurance companies
gainers by this expenditure. The Chief E
thinks that the water used in the extingui
of fires should be paid for by those who rec
the benefit from it. At the fire in West P
phia, a short time since, by which a larg
was destroyed, 150,000 gallons of water w
and to furnish this supply, the steam engi
to be kept working at their full power du
entire night.

For the Pennsylvania Inquirer.

The Delaware Terminus for the Pennsylvania Railroad.

To the President and Directors of the Pennsylvania Railroad Company:

GENTLEMEN:—As the important subject of the terminus for the Pennsylvania Railroad is now under consideration, permit me to give a few reasons in favor of the plan which I have submitted to the Company. The plan which I have proposed is to get rid of the inconveniences attending surface railroads in thickly built cities, and at the same time have the great advantage of a terminus central in the business portion of the city. I propose to do this by means of what has been called a tunnel, but which in reality will be an open cut from river to river, along Callowhill street, involving no more difficulties to be overcome by engineering and mechanical science, than building a culvert the same distance, and about the same amount of cost, proportionate to the work to be accomplished. The reasons which appear to me to recommend this plan over any other which has been submitted are:—

First—Callowhill street is the *shortest* distance between the Schuylkill and the Delaware river, and by some five miles shorter than the route by the Point House, or the Greenwich Land Company's location.

Second—A terminus on the Delaware, at Callowhill street, is nearer the centre of the commercial business of the city, than any other location that can be selected, which can be reached unobstructedly by steam power.

Third—The bridge which will be thrown over the Schuylkill at Callowhill street, to connect with the railroad on the western side, will be a continuous bridge, unobstructed with a *draw*, and interfering in no way with the navigation of the river; neither would the business of the railroad be subjected at any time to the interruptions which would attend a drawbridge laid in its route, requiring it to be opened for every vessel going up or down the river. Any plan which includes a *drawbridge* in its arrangement presents objections which, to my mind, are fatal to its adoption. To say nothing of the opposition which would be raised against another drawbridge over the Schuylkill, injuring all the wharf property above the bridge, the extra expense of continual attendance at the draw, the great risk of life and property over a bridge of this kind, with the immense travel and trade of the Pennsylvania railroad, and the loss of time and interruption to the business of the road, ought forever to exclude the idea of a drawbridge. We all remember the accident at the Norwalk drawbridge, on the New York and New Haven railroad, where a single error of the engineer sent the whole train into the river, burying sixty passengers beyond the reach of help. To repair the consequences of this accident and satisfy the injured parties, one million of dollars, as I am informed by one of the directors, had to be expended out of the funds of the Company.

Fourth—By opening a railroad way under Callowhill street by an open cut arched over, the surface route is avoided *forever*, and with it all the obstructions, which increasing population, business and vehicles must interpose in a continually increasing ratio, to railroad business. Freight, without any transhipment from the starting place, could be delivered on shipboard on the Delaware, or be deposited in storehouses and on wharves ready built for occupation in the very heart of the commercial business. This would lessen the cost of its carriage and the expenses of shipment, and improve the commerce of this port.

Fifth—Throwing the freight business on Delaware avenue at so central a position as Callowhill street, would tend largely to increase the value of property on the Delaware front, and completely alter the appearance of things in that quarter. Instead of having unoccupied warehouses and miles of stores doing a very limited business, new life would be infused into trade and commerce, and every property from the navy yard to Richmond would appreciate in value. We well know, that in proportion as facilities are given to trade, will that trade increase and prosper, and the greatest advantage that New York has over Philadelphia in her commerce, arises from the superior facilities which she has created, and hitherto enjoyed, for getting the produce of the West to her port with the least cost to its owners, allowing, of course, a greater margin of profit. Now, Philadelphia has the shortest route to the granaries of the West and the best finished railroad. The cost of transportation to Philadelphia, in the natural competition of trade, will therefore be much less than to any other shipping port. If we relieve produce of the extra charges which are imposed upon it after it gets to Philadelphia, and furnish the facilities to put it upon shipboard cheaper than it can be done elsewhere, we may expect that Philadelphia will again do a large exporting trade, and the importing trade will naturally follow. What would be the effect upon our city if these anticipations are realized, and that is certainly the object sought in a terminus upon the Delaware? Would it not tend to make the long wharves between Noble street and the Kensington water works, and those downward to the southern end of the occupied city limits, a vast field of commercial operations? The oyster boats, now occupying valuable wharves at Dock street, would find a better place for their business on the Schuylkill. Ocean steamers, and ships engaged in foreign commerce, could take their places, and crowd our docks with business. Then would come a demand for storehouses for the storage of grain, rice, cotton, tobacco, with flour mills, pork packing establishments and other buildings for the accommodation of the shipping and commission merchants. This would give employments to hundreds of mechanics, wharf builders, ship-wrights, laborers, &c. Are these anticipations too sanguine? Let us see the capacity of the Pennsylvania Railroad. It can put on our wharves four millions of barrels of flour annually, twenty million bushels of wheat, twenty million bushels of corn, one hundred million pounds of pork, and in proportion, other commodities which form our export trade. If we could command the produce of the teeming Western States, there would not be room enough on the Delaware from Richmond to League Island to do the shipping and commerce of the port. The figures quoted would give to the Pennsylvania Railroad 3,500,000 tons freight, including return freight in exchange. It would give two millions of through passengers, and it would give the port of Philadelphia $100,000,000 of exports, and $175,000,000 of imports. The trade that these exports and imports would produce, between the South, West and East would amount to more than $600,000,000. If any one is incredulous, I would ask him to look at the trade of New York, and see what composes it, and where it comes from. St. Louis exports 23,000,000 bushels of grain; Chicago, 25,000,000 (they call it fifty); Cincinnati, 38,000,000; Buffalo, 19,000,000 bushels, in the shape of grain, flour, pork, and whiskey. See the trade and wealth of those cities! Buffalo exports 19,000,000 bushels; assessed value of the property of the city, forty millions of dollars. Chicago, 25,000,000 bushels; assessed value of property, forty-five millions of dollars. St. Louis, 23,000,000; property assessed at forty-one millions of dollars. Cincinnati, 38,000,000; assessed value of property, one hundred and fifteen millions of dollars.

Now all these cities send their produce to New York, because that city has hitherto been the cheapest shipping port, an advantage it enjoys from the facilities it has created for the purpose of monopolizing the trade and commerce of the country. What amount does this trade contribute to its wealth? Its ship tonnage exceeds that of any other city, and the assessed value of its city property is five hundred and fifty-one millions of dollars! The city of Brooklyn is about half as much more! New York, in the last five years, by its increase of trade, has added to its wealth the sum of one hundred and seventeen millions of dollars. As I have been comparing other cities, let us look fairly and honestly at Philadelphia; it is the receiver of about 1,500,000 bushels of grain, the assessed value of its property one hundred and fifty-one millions of dollars. Its debt is more than all the cities above named put together.

Sixth—By the plan which I propose, the eastern side of the Schuylkill river could be converted, if desirable, into coal yards; for all that is required is to make the bridge at Callowhill street a four or six track bridge, and on the eastern side to extend double or treble tracks on tressle-work, of a height to avoid the grade of the streets, and to pass under the other bridges over that river. From these vessels could be loaded, or yards supplied with coal. This would tend greatly to improve the value of property all along the Schuylkill front.

Seventh—By crossing at Callowhill street, all the passenger depots could be located at Broad and Callowhill streets. Passengers would be brought by steam power into the centre of the city, losing no time in travelling from Kensington, miles away, to reach the Baltimore Railroad at Broad and Prime, or Pennsylvania Railroad in Market street, and avoiding being hauled by mule teams and omnibuses from depot to depot, located miles apart in the outskirts of the city. This would not only relieve travel of a great annoyance, but also of a vast deal of expense, and would make our railroad arrangements the completest of any city in the world.

The general advantages of my plan of tunnelling Callowhill street, are therefore the establishing of depots on Delaware avenue, from Vine to Noble streets, for the reception of freight from eastern cities, by steamers or otherwise, and for the delivery of western freight to the same—the centering of the passenger depots at Broad and Callowhill streets—the improvement of property on the eastern side of the Schuylkill; the improvement and occupation also of the Pennsylvania Railroad Company's land on the western side of the Schuylkill, from Market street to the wire bridge, and from Thirty-second street to the Port Warden's line on the Schuylkill, levelling the whole to the height of the two present bridges and the one to be built; wharfing the said property and filling in with the earth from the tunnel; reclaiming about forty acres of marsh lands now useless, making in all about ninety acres. The greatest part of this work could be done only as required, and the grounds might ultimately be occupied by through freight or exchange depots, engine houses, machine shops, &c. All travel through the streets of the city by freight cars would be avoided, and also the injury done to the streets thereby and to the property along such streets. The value of property on such streets as are now occupied by railroads on the surface would be improved in consequence of these obstacles being removed.

The estimated cost of the work which I propose to accomplish is as follows:—

For Bridge opposite Callowhill street and the approaches	$300,000
Tunnel from Twenty-second to Front st., 10,000 feet, at $50 per foot	500,000
Removing gas pipe, water pipe, and culverts	58,000
Land damage from Bridge to Tunnel	42,000
	$900,000

In order to show upon what this estimate is based, I here present a detailed estimate for building one foot in length of tunnel.

DETAILED ESTIMATE FOR BUILDING ONE FOOT IN LENGTH OF TUNNEL.

Excavation for a double track, 35 feet 6 inches wide, 18 feet high, making 639 cubic feet, or 23⅔ yards, at 25c., to be taken out by locomotive gravel trains	$5·91	
Removing earth for filling on arch, say 200 feet distance, by wheelbarrow, 55 feet 6 inches wide, 6 feet high or deep, making 213 cubic feet, or 8 yards, at 25c.	$2·00	7·91
Mason Work.		
Two side or bank walls, 12 feet high, 3 feet 6 inches thick; one middle wall, 12 feet high, 2 feet 6 inches thick, making 120 cubic feet, say 5 perches of stone laid in wall at $3·50 per perch		17·50
Brick Work.		
Two arches, 12 feet 9 inches diameter, 1 foot 6 inches thick, equals 1197 bricks, at $10 per M.		11·97
Lumber and Work.		
Planking to prevent caving, two sides, 20 feet high, 3 inch plank, 120 feet at 1¼c. per foot	$1·50	
Timber for shoring the earth or bank, at 10c. per lineal foot	10	1·60
Labor work at shoring, at 10c. per lineal foot	10	
Carpenter work, making centrals for brick arches, at 10c. per lineal foot	10	20
Repaving.		
Paving the street with cobble stone, 26 feet, at 2c. per foot	52	
Repaving sidewalks, 24 feet, at 6c. per foot	1·44	1·96
Resetting curbstone, 2 feet, at 25c. per foot		50
		$41·64
Incidental expenses not foreseen, large allowance		8·36
As per the above estimate		$50·00

S. K. HOXIE.

Pennsylvania Terminus.

BIRKINBINE.—The pious Superintendent of the Water Department, who would not let the fountains play on Sunday, received a reproof from the Common Council which must make his ears tingle throughout their extreme length. He was ordered, by a vote of thirty-three yeas to twenty-two nays, to restore to their situations Job R. Barry and Washington Garrett, assistant engineers, whom he had discharged, being thereto "moved and instigated by the devil." Barry was discharged because Birkinbine was jealous of his superior abilities as an engineer and machinist. Garrett was discharged because he told the truth on the examination of the complaint of Mr. Barry against Birkinbine.

The committee of Councils in relation to the discharge of Mr. Garrett was treated with contempt by the lordly Birkinbine, who did not condescend to attend their meetings. The Select Council is yet to act on the resolution commanding the restoration of Barry and Garrett. The conduct of the Chief Engineer has been so insulting that it is doubtful whether party influence can protect the potentate of the Water Department even in Select Council. The public await the issue with some degree of curiosity.

A NICE MAN.—A Committee of Councils has been investigating a complaint made against Mr. Birkinbine, the Chief Engineer of the Water-works, who had discharged Mr. Job R. Barry, the Engineer of the Fairmount Works. The latter complained to Councils. The committee to investigate the matter declare that Birkinbine's conduct was tyrannical and mean. The sole cause of the discharge of Barry was envy of the superior mechanical talents of the latter, who had invented "an airing apparatus" for working the pumps, superior to anything that Birkinbine could do, although he concealed Barry's invention and endeavored to take the credit to himself. The committee sustain these facts in toto. The report proves that this good Christian Birkinbine, who is too pious to allow the fountains to play on Sunday, was actuated in his conduct to Barry by envy, spite, uncharitableness and unchristianness. Had this report been made three weeks ago, Birkinbine would not have been re-elected.

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their boxes.

May 24

Laying Water Mains.—The twelve inch water main now being laid out the Frankford road, so as to supply the citizens of Frankford with water, has reached within a mile of the town, and by the first of July the Water Department will be ready to introduce the water into houses along the main street. The pipe will not be put in any other street of Frankford until petitions are sent in and Councils direct the extension. The workmen have reached Parrish street, on Ridge avenue, with the thirty-inch main intended to supply the lower section of the city with water. It is being laid alongside of one of the tracks of the Girard Avenue Passenger Railroad, but obstruction to travel over the road is avoided by using switches so as to connect with the other track, and having turn-outs so as to allow the cars to pass.

147

THE CROTON WATER AS PURE AS EVER.

101

Chemical Examinations by Messrs. Chilton and Torrey.

THEIR REPORT.

Drs. CHILTON and TORREY have finally completed their analysis of the Croton water with a view to ascertaining the cause of the unpleasant taste which has been observable in it for some time past. The report was submitted to the Croton Board on Saturday.

As soon as it had been read by them, it was sent to the NEW-YORK TIMES for publication. The chemists, it will be seen, agree that the water during the past three weeks has been as wholesome as ever, and that the unpleasant taste and smell will soon pass away. By comparing his late with his former analysis, Dr. CHILTON has discovered that the Croton is purer now than it was in 1836, 1842 and in 1845. The following is the report:

CROTON AQUEDUCT DEPARTMENT, Rotunda, Park, New-York, Aug. 27, 1859.

The unpleasant taste of the Croton water in the early part of the month induced the Croton Aqueduct Board to call upon Messrs. CHILTON and TORREY, to make a thorough chemical examination.

The reports of those gentlemen are herewith submitted to the public, and it is confidently believed will prove as satisfactory to the community as they have been to this Board. The Board would take this opportunity of saying, that from the first appearance of the objectionable taste in the water, every available means has been employed to discover the cause and counteract its effect; and are happy to add that, in a few days, the entire renewal of the water in the pipes and in the Reservoirs, will do away with the last trace of anything objectionable in its taste.

MYNDERT VAN SCHAICK, }
THOMAS B. TAPPEN, } Croton Aqueduct Board.
A. W. CRAVEN, }

NEW YORK, Aug. 25, 1859.

To Myndert Van Schaick, Thomas B. Tappen and A. W. Craven, Esqs., Croton Aqueduct Board:

GENTLEMEN: At your request, and in company with Dr. CHILTON I visited Croton Lake on the 18th inst. for the purpose of ascertaining, if possible, the cause of the disagreeable quality observed in the water distributed through the City, and which had been the subject of serious and general complaint for a week or two previous. On driving down the hill that leads to the dam, and before reaching the Lake, we noticed the same musty odor that characterized the water of the hydrants in the City. Mr. ADAMSON, the gate-keeper, afforded us every facility in prosecuting our researches, and piloted us to various places on the lake. He brought to our notice a bright green substance that had appeared within the last 24 hours in the water near the dam. This material had been driven, by a favorable wind, to the outlet of the Lake, where it accumulated so as to form a considerable stratum in quiet recesses near the shore. The water at the time was very low, only a small portion flowing over the dam. A quantity of the water, quite thick with the green material, had been reserved for our examination, and we collected some of it ourselves from the surface of the Lake. We soon became convinced that this unusual ingredient was the cause of the peculiar taste and odor of the water. After examining the character of the larger aquatic plants that grew abundantly in the western portion of the Lake, and taking new samples of the water from various places, we returned to the City, and I commenced my examination immediately, before any obvious change had taken place in the properties of the water. On placing a portion of it under a microscope, it was found to be loaded with little straight filaments which were composed of oblong roundish cells, in a single row like a string of beads; and in no case did I find these threads to be branching. Most of the cells were about one-third longer than broad, and were filled with a bright green substance, composed of irregular grains. This matter was proved to be chlorophyll, or the green coloring substance of leaves. Interposed, here and there, in the bead-like filaments, were two other kinds of cells: the one perfectly spherical, three times the size of the oblong ones, and filled with green spores or seeds, by which the plant is reproduced; the other also spherical, but much smaller, and containing a yellowish fluid, but no green grains. The function of the latter is unknown to me.

There were only a few other kinds of microscopic plants in the water, nearly all of which belong to a particular tribe, called by botanists *Desmideæ*. In ordinary seasons these constitute the chief vegetable forms existing in the Croton. The number of living animalculæ was also unusually small. In repeated instances, on concentrating the water of the City hydrants, at the time that it exhibited the offensive properties complained of, I found its characters precisely those of the water taken at the dam. The day after collecting the sample of bright green water at the Lake, I submitted it again to the microscope, and was surprised to find that all the beaded filaments had disappeared; but there were floating in the liquid, in a separate state, the large spherical green cells, and the smaller yellowish ones. I had noticed, in my first examination, several of the filaments break up by the successive bursting of the little cells. Without doubt, the myriads of little plants contained in my sample, had disappeared in the same way. I have since repeatedly seen the filaments break up in water taken from the hydrants. They undergo dissolution much more quickly when they are accumulated by the filter, or when they are confined in a bottle. After the rupture of the cells, the water retains its green color for some time, but it finally becomes bleached from the decomposition of the chlorophyll. The bright green water from the Croton Dam became quite viscid in less than twenty four hours, and the following day it was somewhat putrid and emitted a little ammonia, but not the least trace of sulphuretted hydrogen. Most of the spherical cells just noticed remained entire, but the green ones had evidently matured their spores or seeds.

Before the green water had decomposed, I evaporated a portion to dryness, with great care, so as to avoid scorching it. Sulphuric ether agitated with the residue became of a lively grass-green tint, but without materially diminishing the color of the mass. The solution, after spontaneous evaporation of the ether, left a thick brownish-green matter, which was resoluble in ether and in alcohol, but not in water. It was doubtless one of the coloring bodies of the chlorophyll.

A portion of the green water was then boiled for some time. It lost its color and odor, and deposited brownish flakes on cooling. The water that distilled over contained the odorous principle in a concentrated form.

From this examination, and from the researches of Dr. CHILTON, I think we are warranted in concluding, that the recent offensive condition of the Croton water was owing to a rapid and abundant growth of a microscopic conferva-like plant, which abounds in a volatile, odorous principle, soluble to some extent in water.

REPORT OF THE SPECIAL COMMITTEE IN THE CASE OF MR. JOB R. BARRY.

To the President and Members of the Common Council of the City of Philadelphia.

GENTLEMEN:—The undersigned, a Committee appointed on the 26th day of May, to inquire into the complaint of Mr. Job R. Barry, as set forth in his memorial presented to Council, ask leave to report as follows:—

The Committee have held five meetings, which were attended by a majority of their number. Mr. Bullock not having been present at any one of them. The parties appeared before the Committee, attended by their counsels.

Mr. Barry, who, until the first day of April, 1859, (when he was discharged,) acted in the capacity of Assistant Engineer at the Fairmount Water Works, and held his appointment under the Chief Engineer, Mr. Birkenbine, confirmed by Select Council, being affirmed, submitted his case in twelve specific charges, as follows:

1. I charge that I was dismissed from a situation of Engineer at Fairmount Water Works, on the first day of April last, without a moment's notice, and ordered to vacate the house I was then and still am occupying, immediately, and that my last month's pay was unlawfully obtained and withheld from me by Mr. Birkenbine, in order to coerce me into submission to his arbitrary demands.

2. That my dismissal was not caused by any fault of mine, or any neglect of duty whatsoever, but was (in my opinion) the result of considerations totally unworthy an honorable and high-minded man, and much more the humble and devout Christian Mr. Birkenbine professes to be. The consideration in question being petty jealousy, envy, and revenge.

3. That the immediate and direct cause of my dismissal, was the fact of my calling upon a member of the Water Committee, to explain my airing apparatus, at which interview I made *truthful* statements of occurrences that had transpired at the Works, which statements did not accord with the representations that were made by Mr. Birkenbine to the Watering Committee.

4. That as the self-acting airing apparatus (put up by myself, at my own risk and expense, last November) was an entire success, that Mr. Birkenbine has falsified his word in not adopting the same, or recommending its adoption, when the understanding was, that it should be adopted if it was successful.

5. That Mr. Birkenbine has caused a serious and unjustifiable pecuniary loss to myself, in the fact of my discharge, and in his rejecting my airing apparatus.

6. That Mr. Birkenbine, in the condemning and removal of the self-acting airing apparatus put up by myself, and the substitution of an abortive attempt to accomplish the same thing by himself, evinces a want of knowledge that totally unfits him to be a judge of such matters.

7. That Mr. Birkenbine is guilty of wilful and malicious slander in falsely representing as follows: That I was indolent and neglectful of my duties as an Engineer. That I took no interest in the Works. That I was wilful, overbearing and quarrelsome, and refused to obey orders. That I was partially insane, and would become quite so. That my father was crazy, or had died crazy, and that he did not consider it safe for me to have charge of the Works.

8. That while Mr. Birkenbine makes loud professions of requiring his Engineers and other employees to be strictly temperate, that in my dismissal he has discharged one of the most thorough temperance men in his employ, and retain men in responsible positions who spend a large part of their time at taverns, when they should be on duty, and are sometimes on duty drunk.

9. That the investigation of a sub-committee professedly of the Water Committee of the running down of the Turbine Water Wheel, by Cyrus Parker, on the 22d of January last, was a sham investigation, without the knowledge or consent of the Water Committee, and had for the purpose of screening the said Cyrus Parker from the consequences of a proper investigation.

10. That in the matter of personal difficulty between myself and Mr. Cyrus Parker, that Mr. Birkenbine has sustained and does sustain the said Cyrus Parker, notwithstanding it has been shown that he, Mr. Parker, is clearly in the wrong.

11. That Mr. Birkenbine has endeavored to prejudice an important witness in my case, by the statements to that witness of positive, wilful falsehoods.

12. I charge that Mr. Birkenbine has taken unfair advantage of the position he holds, to prejudice the minds of members of Council against me, in order to prevent me from having a hearing before a Committee of that body.

Mr. Birkenbine was then requested to assign his reasons for Mr. Barry's removal, which he did as follows, protesting, however, against Mr. Barry's right to demand the cause, or the Committee's right to inquire into the reasons for the discharge:—

1. He sub-let the house in which he resides.
2. He determined upon having a cake shop, and was about opening it, and was discharged in consequence.
3. He was quarrelsome and ungentlemanly with the men about the Works, and attempted to have a high tone with them.
4. There was no need of his services.
5. He has appropriated to his own use property belonging to the city before and since his discharge.

The counsel for the parties confined themselves mainly to the consideration of the reasons, assigned by Mr. Birkenbine for the removal of Mr. Barry, although the statements of Mr. Barry in relation to the running down of the Turbine Water Wheel—the application to the pumps of his newly invented airing apparatus, and its removal therefrom by Mr. Birkenbine, and the substitution, were incidentally alluded to.

A full examination of the charges of Mr. Barry not being demanded by either party, the Committee did not feel themselves called upon to press the inquiry in that direction, and will, therefore, confine their report to the evidence in relation to the reasons assigned for Mr. Barry's removal.

The first reason assigned by Mr. Birkenbine for the discharge of Mr. Barry was not sustained. Mr. Barry appears to have received into his family, as boarders, his father and mother, sister and brother-in-law; but it was not shown that this addition to his household was in any way prejudicial to the public interest.

The second reason was not sustained. The testimony established the fact, that application was made by Mr. Barry to Mr. Birkenbine, or to the Water Committee, for the privilege of opening an ice cream saloon; but it does not appear that any action was had upon it, nor does it appear that Mr. Barry persisted in opening such a place.

The evidence as to the third reason was conflicting.

Mr. Garrett, one of the Assistant Engineers, and a co-worker with Mr. Barry, testified that "he had been in the employ of the city, in his present capacity, seven or eight years; that Mr Barry was always peaceful; not quarrelsome; never heard him disrespectful to the Chief Engineer; is an ingenious man."

Mr. Chamberlain and Mr. Cattern corroborated the above testimony.

Mr. Hickman, a police officer, says: "His deportment towards me was ugly; never knew him to neglect his duty."

Mr. Parker, an Assistant Engineer, says: "Mr. Barry is quarrelsome; has quarreled with Mr. Garrett and myself."

Mr. Charles Morris says: "Mr. Barry is quarrelsome; he quarreled with me."

It will be observed that, whilst Mr. Parker swears that Mr. Barry quarreled with Mr. Garrett, Mr. Garrett affirms that Mr. Barry was "always peaceful, and not quarrelsome. Upon the whole, your Committee are of opinion that the charge is not sustained. That there was ill feeling existing between him and Mr. Parker is beyond question, but that the fault was with Mr. Barry does by no means appear certain.

Mr. Birkenbine's fourth reason, "That he had no use for a third Engineer."

Your Committee would commend every manifestation of a disposition to economize in any department of the city government; and if Mr. Birkenbine possessed the right to reduce the number of Assistant Engineers from three, as provided by the Ordinance of October 3, 1854, to two, and was moved thereto by a spirit of economy, your Committee would most cheerfully recommend his action to the favorable consideration of Councils, and the assignment of any other reason for Mr. Barry's removal would have been superfluous.

But has the head of a Department the right to disregard a mandatory provision of an ordinance?

Section 4 of the Ordinance of Oct. 3, 1854, provides, "That there *shall* be three Assistants at the Fairmount Water Works, &c.

By this ordinance, Councils, in their wisdom, have enacted that there *shall* be three Engineers at the Fairmount Water Works, thereby depriving him of all discretion as to the number of men necessary to perform this duty at that place.

If the Chief Engineer has the right thus to ignore the plain language of the ordinance in reference to the number of Engineers necessary at the Water Works, and set up his will in opposition to the deliberate judgment of the legislative and executive departments of the city government, he may with equal propriety dispense with a large proportion of the officers in his department, as created by law.

* * * * * *

Mr. Birkenbine's fifth reason has received the serious consideration of your Committee. It appeared by the evidence, that the Engineers, Carpenters and other employees of the city at the Fairmount Water Works were in the practice of using the cuttings of the carpenter shops, and other refuse lumber, which accumulated in considerable quantity about the Works, as mainly for the purpose of kindling coal fires—Mr. Barry, it was admitted, participated in this practice, but it was contended that he was not more censurable than others who are continued at the Works.

There was no evidence that Mr. Birkenbine at any time objected to this practice or expostulated with Mr. Barry in reference to it.

It was proven, also, that Mr. Barry, during his temporary occupancy of the house on the north side of the Works, had used coal from the city bins. This was not denied, but was, on the contrary, admitted by Mr. Barry, who informed those with whom he conversed on the subject that he was borrowing it, not wishing to buy coal until he removed into the house which he was to occupy permanently. It was contended by Mr. Barry that this coal was taken with the consent of Mr. Birkenbine, and with the understanding that it was to be returned. In order to prove this, Mr. Birkinbine was asked by the counsel of Mr. Barry, to testify as to the facts of the case. This Mr. Birkenbine declined to do.

* * * * *

The Committee are forced to the conclusion that Mr. Barry's statement of the transaction is the truthful one, and therefore report that no one of the reasons for the removal of Mr. Barry, as given by Mr. Birkenbine, has been sustained by the testimony submitted to them.

All of which is respectfully submitted.

WM. B. THOMAS,
WM. LOUGHLIN,
JOHN DYER,
JOSEPH SITES.

Having extended this communication already beyond what I expected, and you have room, perhaps, to admit, I shall close by acknowledging my obligation to you for publishing it, and with your permission, continue it in your next.

Yours, respectfully,

JOB. R. BARRY,
Late Eng. at Fairmount Water Works.

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apr 2d 15 122

Increase, $146 13 48,497 15 43,644 08

The Work of Laying the 30 inch water main, recently authorized by Councils, was commenced yesterday, at the reservoir on Poplar street, at Corinthian avenue, where it will be connected with a main of similar size laid at the time of the building of the reservoir. This main will be laid in Poplar street to Ridge avenue, down the Ridge to Broad street, and thence to Prime, at which point a 20 inch main will be continued to Tenth street, and then connected with a 16 inch main to Fifth street. The whole work is to be completed by the 1st of September, at a cost of about $137,500. The raising of the reservoir nine feet will be commenced in a few days, so as to be completed by the time the pipes are laid. This improvement, will, it is thought, furnish the lower section of the city with an abundant supply of water at all seasons of the year, a blessing which the residents have long been deprived of, particularly in warm weather.

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this State, and the stock cattle from Ohio, Illinois, &c.

132 October 22/59

Cutting off Water.—The Register of Water is now sending to the Purveyors in each ward the names of those who have neglected to pay their water rents for 1859, with directions to cut off their supply of water. The following figures show the number that have neglected to pay in each ward: First Ward, 350; Second, 400; Third, 250; Fourth, 200; Fifth, 327; Sixth, 210; Seventh, 315; Eighth, 280; Tenth, 225; Eleventh, 161; Twelfth, 100; Thirteenth, 127; Fourteenth, 175; Fifteenth, 560; Sixteenth, 125; Seventeenth, 280; Eighteenth, 300; Nineteenth, 400; Twentieth, 666; Twenty-fourth, 116. Why not let the tenants of the premises know that the taxes are unsettled before they are put to the inconvenience of having the water cut off? Many of them would no doubt prefer paying the tax themselves rather than be subjected to this deprivation. They could deduct it from the rent.

The Work of erecting the new house, at Fairmount, for the accommodation of the two Turbine wheels and pumps, has been delayed thus far in consequence of no action being taken by the Committee on Water, on the plans submitted by the Chief Engineer. The committee appointed at the last meeting of Councils, will take the subject up at their next meeting, and it is probable the work will be commenced next month, so as to have the pumps in operation early next year. This improvement, in connection with the raising of the reservoir, will, it is thought, enable our citizens to obtain a full supply of water at all times for several years to come, and we hope, also, to furnish public drinking fountains in the streets.

SUNDAY DISPATCH.

PHILADELPHIA, MAY 15, 1859.

Councils in Motion.

The City Councils have been organized. In the Common Council the re-election of Mr. Trego as President was a tribute justly due to a worthy gentleman, who, as a member of Councils and as presiding officer, has conducted himself with fidelity, integrity and dignity. The choice of Mr. Cornman as President of the Select Council will not be received with wide applause. Mr. Cornman is a true specimen of the hide-bound, scheming politician, who makes party his god, and is willing to lend himself to any partizan device. We may expect that if there is any necessity for Mr. Cornman to act with impartiality in the Presidential chair, he will not do so if there is any party necessity for favoritism or unfairness. We do not know, however, that Mr. Cornman can go out of the office with less credit to himself than his immediate predecessor. Mr. George M. Wharton has injured his character to such a degree by his political conduct in Councils, that it will be impossible for him ever to retrieve it. He went into that position with some reputation as a fair man. He could have afforded to be independent, but he chose rather to lend himself to every political meanness that the Federal Dictatorship at Washington directed. Citizens were much disappointed in his course, and his subserviency proves how difficult it is for a man to engage in politics and maintain the respect of his fellow-citizens. The retirement of Mr. Wharton is no calamity; and we predict that if, in a year or two, Mr. Cornman also retires, the public interests will not suffer in the least.

The old clerks of Select Council, Messrs. Henry G. Leisenring and Horace M. Martin, have been displaced by the changes in the chamber. They were faithful, competent and obliging, and leave their situations with the good will of members of all parties.

Mr. J. Barclay Harding, the new clerk of the upper chamber, has had an excellent training as assistant clerk of Common Council, in which situation he conducted himself so well as to deserve promotion. Gen. Wm. F. Small has been re-elected clerk of the Common Council—a situation in which he gave full satisfaction. The assistant clerk of Select Council, George Mooney, is, we believe, new to such a position. He will have good direction from the chief clerk. George F. Gordon, rejected of the people, has managed to enlist sufficient pity on the part of members of the Common Council to permit him to go from his chair to a place behind the desk. Gordon is one of the most unmitigated humbugs of the age. The members of Common Council are likely to have considerable trouble with him—a punishment which they will richly deserve for making such a foolish choice.

The stationery experiment of last year seemed to rest heavily upon the minds of members. They put through in the quickest time an ordinance for the appointment of a joint standing committee to superintend printing, binding and supplies for the clerks. Whether the members wanted this patronage themselves, or whether there was any real necessity for the ordinance, we cannot undertake to say.

Chief Engineer of Water Works.

PHILADELPHIA, June 14th, 1859.

To the Editor of the Evening Journal:

DEAR SIR,—I have noticed with extreme pleasure the announcement by the daily papers, of Mr. Frederick Graff's intention to become a candidate for the office of Chief Engineer of the Water Department of this city. We have among us no one so eminently qualified for this position, requiring as it does, a man of scientific attainments, particularly as a Mechanical and Hydraulic Engineer. Mr. Graff has gained an enviable reputation for practical and theoretical knowledge in these branches, and is consulted, and esteemed high authority, by corporations and individuals throughout the Union.

The experience acquired by him under his late, lamented father, to whom we are indebted for the elegance and utility combined in the design and erection of our Fairmount Water Works, and during his own superintendence of the same, has given him a thorough understanding of the business of the office.

His close application as a student of engineering, architecture, and many kindred arts and sciences, joined to his integrity and high character as a man, render him altogether a most suitable candidate for this very responsible post; and I trust the advantage of having it filled by one possessing so much ability, may be seen, felt, and acted on accordingly, by those controlling the election, without regard to party, or political favoritism. This office, at least, should be free from all such influences.

Very respectfully,

OLD CITIZEN.

[Communicated.]

GENTLEMEN: As your paper is the advocate of the rights of labor, and justice to the mechanic especially, I may with propriety ask for a small space in your valuable sheet, to expose to the gaze of my fellow mechanics the hypocritical, abusive, and tyrannical course pursued by H. P. M. Birkenbine, the present head of the Water Department, towards some of his subordinates, and ask of you such an expression of sentiment as the importance of the case may warrant from the principles involved.

Now, as the public are somewhat familiar with the leading facts of the case, I need not go into details as much as I should were it otherwise. Suffice it to say, then, that I was discharged from a situation as an engineer at the Fairmount Water Works on the 1st of April last, without a moment's notice, and for no fault or neglect of duty whatever; but merely to gratify Mr. Birkenbine's anti-Christian passions of *envy, jealousy,* and *revenge.* I was also ordered to vacate the house I was then occupying immediately; and in order to force me into compliance with so arbitrary and unreasonable a demand, he essayed to play the petty tyrant, as follows: In accordance with the usual custom, Mr. Garret, one of the engineers, went to the office to get the warrants for our last month's pay; in this respect, Mr. Garret was acting as agent for those for whom he obtained the warrants. After receiving them from Mr. Birkenbine, that particularly pious gentleman required Mr. Garret to withhold my warrant from me, and return it to him after procuring the Controller's signature; which he accordingly did. Whereupon I called upon Mr. Birkenbine to ascertain the reasons for my discharge, and to procure my warrant; but, instead of receiving either, insult was added to injury, and I was told that I could have my warrent when I vacated the premises I was occupying, and not before. Now, in order to appreciate fully the depth of the meanness of this despotic act, it is necessary for me to state that Mr. Birkenbine was familiar with my pecuniarily embarrassed condition, and no doubt thought, from that circumstance, that it would be an easy thing to starve me into terms; but in this respect, he was mistaken. And upon his refusing me the warrant, I told him he could keep it, as I was not the man to be coerced into submission of such a despotic act as that. So, at the expiration of ten days, Mr. Birkenbine, finding that the stealthful possession of my warrant did not accomplish what he had intended, but was operating greatly to his disadvantage among all *honorable* and *honest* men, and being rebuked by them on all sides, he sent me a message requesting me to come and get my warrant; which request I readily acceded to.

Believing at the time of my dismissal, that the act of consolidation did not create a number of absolute despotisms in our midst, in the social departments which it created, and that the heads of the various departments were responsible to Councils for any abuse of power which they might exercise, I petitioned that body for a redress of the wrong which I considered had been done me. My petition was referred to the Water Committee, a minority of whom, I am satisfied, were disposed to do me justice; but Mr. Birkenbine's influence was such as to prevent any investigation of the matter until that committee's term of service expired. Immediately after the election, I petitioned the present Council for an investigation of the matter of my discharge. My petition was again referred to the Water Committee, together with a resolution that they should give me a hearing, and report the result to Council. But again Mr. Birkenbine's influence prevailed even to a greater extent than before, as it was sufficient to induce the committee to completely ignore the positive instructions of Council to give me a hearing; and so they reported that no investigation of the case was needed, and asked to be discharged from the further consideration of the subject; which was done.

But notwithstanding these successive rebuffs, I was still satisfied that Councils would do me justice, if I could, by any possibility, get the facts of the case before them, so I petitioned them again, asking that my petition be referred to a special committee. Upon the reading of the petition, Mr. Birkenbine's friends in Council, in order to stifle discussion and prevent an investigation, moved to lay it on the table; but the very effort itself seemed to cause a reaction; for the motion was voted down, and the matter was referred to a special committee by a large majority.

Upon the assembling of the committee, I presented my grounds of complaint against Mr. Birkenbine, as best I could, in twelve specific charges, which seemed very much to offend the dignity of the gentleman, who, upon being asked by the committee what answer he would make to the charges, stated that he would take no notice of them whatever; nor would he give the committee any satisfaction as to the reasons for my dismissal; but at the next meeting of the committee, he reconsidered his position, and submitted certain charges against me, which he assigned as his reasons for my removal. The committee proceeded to the investigation of the charges, the result of which will be best seen by a perusal of the report of the committee; which was unanimously signed, and is as follows:

SERIOUS ACCIDENT TO THE COCHITUATE WATER WORKS.

The Water Gates and Pipes over Charles River, at Newton, Carried Away—Orders from the Water Board to Stop Supplies.

From the Boston Atlas and Bee, 30th.

Between 6 and 7 o'clock yesterday morning, a most serious and unfortunate accident occurred to the Cochituate Water Works, on Ware's Hill, at Newton Lower Falls, at the point where the brick conduit is united with the iron pipes that convey the water across Charles river. The rush of water in the immediate vicinity and in the mills at the Falls, caused by the sudden rise of the stream, caused no little alarm. As soon as the water had got through the conduit, the large volume and immense pressure increased the break to a destructive extent.

Over 250 feet of the aqueduct was swept away, leaving a chasm extending from the bridge into the embankment. The breach is about sixty feet wide and eighty feet deep, from which the earth was washed out nearly level with the river bank, leaving the pipes and masses of the broken conduit imbedded in a confused heap at the bottom. The great quantity of gravel swept into the river, together with underbrush and trees, caused the water to overflow a portion of the farm of Mr. A. C. Curtis, resulting in considerable damage. So great was the rush of water at the Falls as to stop the mills.

The scene of the disaster is one of much interest, though it naturally excites regret alike at the destruction of property and the inconvenience that will result to the people of our city. It is thought that the old pipe on the west side of the aqueduct must have given way first, and the flood of water caused thereby created an excavation which undermined the pipes and conduit; thus left unsupported they fell in. The pipes are 30 inches in diameter, and 1000 feet in length, and connect the two sections of the brick conduit.

Mr. E. F. Knowlton, Superintendent of the western division of the Water Works, who resides at Newton Lower Falls, immediately dispatched a messenger to the office of the Water Board, in this city, and then at once proceeded to the gate house at Lake Cochituate, and shut off the water, thus stopping the supply of the devastating element. The City Engineer, Mr. James Slade, was upon the ground at an early hour. After a brief consultation with Mr. A. Stanwood, in this city, Superintendent of the eastern division of the works, the latter was dispatched to Brookline, where a large gang of men were at work on the line of the new main, whom he forthwith sent to the break.

In the afternoon the men—some one hundred and fifty in number—were set to work, and are to continue till the damage is repaired. The Mayor, Water Board, members of the Board of Aldermen and Common Council, and other officials, visited the scene of disaster, yesterday afternoon. Hundreds of spectators were also attracted hence, for the wildest stories of destruction had got abroad. The aqueduct, at the point where the break occurred, is built of brick masonry, eight inches thick, laid in hydraulic cement. It is an egg shaped oval in form, the largest end down; the greatest width is five feet, and the extreme height six feet four inches, in the interior. It is covered with a plastering of hydraulic cement on the outside. During the continuance of this unfortunate emergency, the supply of water for the city will be entirely from the Brookline reservoir, which contains at a depth of 6 feet below the top of the dam 22 31 acres, its capacity is 89,909,730 wine gallons; at two feet below the top of the dam it contains an area of 22 95 acres, and the capacity is 110,583,960 wine gallons. There is probably *a week's supply at Brookline.*

The following notice was issued, yesterday noon, by the Cochituate Water Board:

"Owing to a breach in the aqueduct at Newton Lower Falls, it becomes a matter of the most urgent necessity that every water taker shall use Cochituate water with the utmost economy. The high service will be exposed to imminent suffering, unless those upon the lower parts of the city use the utmost moderation in their consumption.

JOHN H. WILKINS."

Information was also sent to manufacturing establishments and other places where large quantities of water are used, that it was necessary to cut off the supply at once, which was done. The necessity of this course, no less than economy in the use of water by our citizens generally, will be apparent. The reservoirs on Beacon Hill and at East and South Boston combined will hold about as many gallons of water as have been daily used in the whole city.

It is probable that ten days will be required to complete the repairs on the aqueduct. Workmen will be employed night and day to the end.

The damage is variously estimated at from $100,000 to $200,000. The place where this breach occurred was regarded as the weakest portion of the line. There was a difficulty between the owner of the soil and the city a few years ago, and the Supreme Court issued an injunction to prevent his digging away the earth from the slope of the hill, near the water pipe.

It is probable that this disaster will lead the way to the adoption of a durable aqueduct, or some such plan as will prevent a supply from being cut off as is now the case.

Persons who have water backs to their ranges or furnaces should take immediate precautions against explosions. The water for their supply is liable to fail whenever the head of water is reduced in the Brookline reservoir. In the upper sections of the city this may occur in a day or two.

The water in the lake has for some time been unusually high, flowing about four feet over the dam, notwithstanding it has been constantly let off at the "blow outs," and every possible outlet.

The capacity of the Brookline reservoir is 100,000,000 gallons; of the Beacon Hill reservoir, 2,678,961 gallons; of the South Boston reservoir, 7,000,000 gallons; and of the East Boston reservoir, 5,591,816 gallons.

[For the Philadelphia Daily News.]

Heads of Departments—About Water Basins.

Mr Editor:—The time is approaching when the Councils of our City will be called upon to make appointments to the heads of the different Departments, a matter in which all good citizens must feel a deep interest, and look forward with a hope that our City Guardians will be governed by wisdom in making their choice of men, as regards qualification and fitness to fill the different positions to which they may be called.

The future prosperity of the City depends in a measure on these appointments; and the party in power, if they wish to retain the management of the affairs of the City, must devote their energies to reform the many abuses so loudly complained of in some of the former appointments. They will again be beset with a flood of applicants for office, many of whom, no doubt, are disqualified to fill the position they ask.

Good men should not be displaced simply to make room for others, unless it is certain they are better qualified for the position, and the public interest will be better served.

Improvements are now in progress, with which it would be unwise to interfere; and in the event of a change in the heads, would, without doubt, subject the City to great loss, and delay in the prosecution of the improvements in hand.

For instance, the Water Department. The improvements now being made for the better supply of water is of great importance to the City; it is the commencement of a system which should have been adopted in the first organization of that Department after consolidation.

The idea of supplying one general system of distribution from reservoirs of different altitudes, is novel, and shows a want of knowledge in Hydraulic Engineering, which is inexcusable. The Reservoir now being raised, should, when constructed, have been made to correspond in level with those of one or the other of the works, as it could have no distinct distribution.

The plan now adopted will admit of dividing the City into Districts, having each its own water circulation and reservoir separate. For instance, the Districts south of Callowhill street can be well supplied for many years from the works now being improved in connection with the Spring Garden Works, and as those works will not supply the high Northern portions of the upper District, it will be necessary at no distant period to construct a reservoir of large dimensions upon the highest ground in the District, that will cover and supply the entire District, and furnish water to the lower reservoir in case of need.

It must be evident to all who are conversant with the subject, that reservoirs of different elevations, supplying the same distribution, must act unequal, and draw the largest amount of water from the one most elevated, and decrease the flow from the other, unless the difference in the length of mains is such as to increase the friction in the conduit equal to the difference of the hydrostatic head, which is not the case in the reservoirs alluded to.

The effect of the present operation can be made manifest by closing all outlets from the distribution, which would cause a transfer of water from the highest to the lower reservoir through the distributing conduits, until it finds its level or overflows the lower reservoir.

It would be difficult to determine what was aimed at in the last constructed reservoir for the City, unless it was to act as a feeder to the lower ones; this in my opinion would not be good policy after expending extra power to raise the water the additional height, as the hydrostatic effect would be lost to the distribution equal to the difference of elevation, by letting it down to the reservoir below.

The former heads of the Water Department seemed to think it was unnecessary to provide for the growing demand for water, for which neglect the present head of that department is now applying a remedy, and in the height of which I would ask, would it be prudent to derange the places by changing the head before the improvements are completed? The answer of all whose minds are unprejudiced will be no.

AN OBSERVER.

The aqueduct, when it was originally constructed was estimated to be of a capacity sufficient to covey 11,000,000 of gallons per day. But it was not then considered safe to use the full head of water. Of late years, and since the consumption of water has increased so enormously, it has sometimes been tasked nearly to its utmost capacity, which is estimated to be 18,000,000 gallons per day. The strain upon it, therefore, has been such as to lead to apprehensions that some such misfortune might occur as we now record.

An accident of this nature on the line of the works between Brookline and Boston would have been attended with more serious consequences in the failure of the water.

It is proposed to build a dyke across the chasm, and fill each side, and then lay pipes to connect with the viaduct at the top of the hill.

JOHN L. CULIN, Sec'y.

☞ THE WATER DEPARTMENT.—The Chief Engineer of the Water Department, Mr. H. P. M. Birkenbine, has published in the North American his communication to Councils, declining to comply with their request to reinstate Job R. Barry and Washington Garrett, and has prefaced it with an article to which we wish to call the attention of the numerous readers of the Ledger.

In his introduction Mr. Birkenbine specifies the reasons which induced him to remove Mr. Barry, as follows—

"That he has *since* obtained more competent men."

"Mr. Barry desired to keep a cake shop."

"After the removal of his airing apparatus he lost no opportunity of misrepresenting every act of the Chief Engineer, and was removed in consequence."

"Mr. Barry made himself obnoxious by keeping boarders in his house."

"He paid about as much attention to Spiritualism as he did to his business."

Mr. Birkenbine, in this communication, shows how prolific he is of resources. Failing to sustain himself by the trumped up charges assigned before the Committee of Councils which investigated Mr. Barry's case, he now originates a second condition, many of which are entirely new, in the hope of shielding himself from the censure of Councils and an indignant public, by *other* reasons for the removal of faithful and efficient public servants—some of which, however, approximate much nearer the truth than those given to the Committee, and which were pronounced by them in a unanimous report to be ridiculously frivolous, maliciously wicked, and utterly unfounded.

Mr. Burkenbine told the *Committee* he removed Mr. Barry, first, "Because there was no need of a third engineer;" second. "he wished to keep a cake-shop in his house;" third, "he appropriated the property of the city to his own use" These were *all* the reasons assigned for his removal; which, if true, would have been sufficient. But unfortunately for Mr Burkenbine, they were all proved to be false, and only presented by him for the purpose of enabling him to withhold the real reasons, which he was afraid or ashamed to publish.

He now asserts he removed him, first, "because he has *since* obtained men more competent;" second, "he lost no opportunity of misrepresenting the acts of the Chief Engineer;" third, "he paid too much attention to Spiritualism"

If these were the causes which prompted the Chief Engineer to remove Mr. Barry, why did he not say so to the Committee, instead of presenting a string of false and unfounded charges, to sustain which he was unable to adduce a particle of testimony, and which he was not willing to support by his oath?

Mr. Birkenbine admits that Mr. Barry invented an airing machine of 'considerable merit' if put in the right place. But he (Barry) placed it on the valves, instead of on the air-chamber.

The fact is that Mr. Barry's airing apparatus was entirely successful as constructed and placed by him. So much so, that the expense and labor of airing the pumps was saved from December to April, when it was removed by Mr. Birkenbine, to make room for one of his own invention, (if this term can be properly applied to that which has proved to be an entire failure.)

The machine of Mr. Burkenbine proved a complete abortion, and in the hands of his "more competent men," who took the places of Messrs Barry and Garrett, resulted in the explosion of Pumps No. 3 and 4 about two weeks after Mr Garrett's discharge, at an expense to the city for their repair of a sum about equivalent to the salaries of three practical men for an entire year. The removal of Messrs Barry and Garrett, and the substitution of Birkenbine's abortion for Barry's efficient self-acting airing apparatus, was the sole cause of this damage to the Fairmount Works—Mr. Burkenbine's "more competent men" being totally incompetent to discharge the duties which Mr. Garrett had performed for upwards of seven years without a single accident.

The second count in Mr. Birkenbine's second series of charges is that Mr. Barry desired to keep a cake shop. Mr. Barry, as an equivalent for some privileges which the Watering Committee desired to avail themselves of in his house, proposed that they should grant him the liberty to open an ice-cream saloon; but that he ever pressed the matter upon either Mr. Birkenbine or the Committee is entirely false, and for the truth of this assertion he confidently appeals to the *independent* members of that committee.

Of course, he cannot expect those members of the committee who are under obligations to Mr. Birkenbine to sustain him in anything he may say prejudicial to the cause of their benefactor. He will not refer his case to Mr. Bobb, who has two or more sons nicely provided for by Mr. Birkenbine in the Water Department, nor to Mr. Parker, whose nephew is one of the "more competent men," protected by him, nor to Mr. Cornman, his payed Attorney; but to either and all others on that committee to say whether he persisted in opening a saloon, or annoyed them in any way on that or any other subject.

Again, Mr. Birkenbine charges Mr. Barry with keeping boarders. For those who can condemn a son in the fulfilment of his filial obligations, for opening his house to his aged and indigent parents, we have no arguments or explanations. We have always supposed that religious bigotry and intolerance was at the bottom of this whole business; but we scarcely believed that the Chief Engineer possessed sufficient courage to avow in the face of the people of Philadelphia that unless those dependant upon him for place conformed their religious views to suit his religious dogmas they would be deprived of their situations, and the bread taken out of the mouths of their wives and children. But such seems to be the case. Mr. Barry "paid attention to Spiritualism" instead of attending Mr. Chief Engineer Birkenbine's church, and is, therefore, unfit to serve the city.

It was proven before the Committee, that he attended to his duties as an engineer. Mr. Birkenbine did not assign inattention or incapacity as one of the causes of his removal, when before the committee. The works were successfully conducted during all the time he had them in charge; so that his religious opinions in no way interfered with his duties to the city, and yet his religious opinions were the cause of his removal—so says Mr Birkenbine in the North American, Sept. 17th 1859. Had he attended Mr. Birkenbine's church or had he spent one, two or three hours in prayer, according to the Chief Engineer's approved form, he would no doubt have tolerated it, although the worshiper might have entrenched somewhat on the rights of the city.

Mr. Barry is not the only person that has been removed by the Chief Engineer because he was not considered orthodox on the subject of Religion.

The hypocritical pharisaism which would stop the fountains on Sunday, and close the park gates against the people, in order to commend itself to the sincere and honest religious sentiment of the country, is in the case of Mr. Birkenbine, also made a political power, which is to prostrate all those who dare to sustain the people in their right to worship God according to the dictates of their consciences, and consummate ultimately the unnatural union of Church and State. Let those who are in favor of religious freedom be watchful. "Eternal vigilance, is the price of Liberty." [*622] EQUITY.

Ledger 20th Sept /59

THE DEPARTMENT OF WATER.

No branch of the city government has of late years grown into more importance than that charged with the duty of supplying the city with water. Prior to the act of consolidation, the operations of our water-works were limited to furnishing water south of Vine street. Spring Garden, the Northern Liberties, and the Penn District, obtained their water from the Spring Garden works, Kensington and Richmond from the Delaware works in Kensington, and West Philadelphia had also its own works. These were all under separate management, and regulated to suit the varying politics or interests of different corporations. Consolidation changed this at once. Unlike the gas department, the attempt at union here was not hampered by the necessity of buying out private companies. These various water-works were owned by the municipal authorities, and when the city was consolidated, the new city succeeded to the possession at once and without difficulty.

The department is under the direct supervision and control of the City Councils, by whom the Chief Engineer is elected annually. That officer appoints all the subordinates of the department. The Chief Engineer is the executive head. He plans all improvements, extensions, supervises all the working operations, procures supplies, and is in fact the chief working man. But he is directed and controlled by the Committee on Water-works of the City Councils, which during the past year has consisted of the following gentlemen:—Oliver P. Cornman, William Neal, Theodore Cuyler, Thomas P. Norman, Oliver H. P. Parker, William O. Kline, Hiram Miller, Charles A. Rubincam, Peter Bobb, James Gay, William H. French, and Joseph Manuel, jr. The Chief Engineer, Mr. Henry P. M. Birkinbine, was the original constructor of the West Philadelphia water-works, and the skill he displayed therein no doubt induced Councils to entrust to him the management of the department.

He appointed as the Register William J. P. White, Esq., at the time filling the position of Mayor's Clerk, but formerly Postmaster of the city. That this choice was a good one was freely acknowledged. The Register's Chief Clerk is George H. Moore, and the Permit Clerks are Thomas S. Darling, Joseph Aitken, and Joseph P. Simons, all competent and reliable persons. Through the hands of these clerks all the payments for water rents pass, as well as all the permits for the introduction of water. So that the amount of business transacted in the office is very large.

With the Select Council in the hands of the democrats, and the Common Council controlled by the People's Party, the Water Committee has been so framed as to work admirably. Notwithstanding the intelligence and probity of the gentlemen composing that body, the department might have been mismanaged to any extent had it been in the hands of improper administrative officers, bent on making money for themselves at the expense of the public. But the force composing the responsible portion of this branch of the city government was very judiciously selected, and has, in the hands of Mr. Birkenbine and Mr. White, been rendered unusually effective for the best purposes. In order to show how faithfully this trust has been administered, we desire to call attention to a few facts, culled from authentic documents. Here is an extract from the report of the Chief Engineer for the year 1859:

SUPPLIES FOR ALL WORKS.

	From January to July.	From July to January.
Coal,	$18,228 90	$14,260 52
Oil and tallow,	3,184 03	1,439 26
Wood,	291 73	21 00
Packing waste, &c.,	927 17	690 81
	$22,631 83	$16,411 59
Cr. By 350 tons of coal on hand, at $1,		1,400 00
Which is an excess of the amount on hand July 1st,		$15,011 59

Being a saving of $7,620 24. The amount of water pumped the last six months above the first six was 589,087,993 gallons. This would make the expense to the city in the above supplies, in raising one million of gallons of water into the reservoirs for the first six months, an average of $7 24¼, and for the last six months, $4 04¼, or a saving of sixty-four dollars per day in the above supplies alone in raising the average daily amount, or a total saving of $11,885 88 for the last six months.

Now it must be borne in mind that the new Councils did not elect the Chief Engineer until near the close of the first six months of the year, that being the regular time. He then had to make all his appointments, so that the department was not fully reorganized for effective operations until about the beginning of July. Thus the first half year represents the democratic administration, and the last half that of the People's party. The new officials did the work at a saving of $7 620 24, and pumped 589,087,993 more gallons of water in the same length of time. We might refer in this connection to the enormous coal fraud in the water department during the democratic administration, which was ferreted out and exposed by Mr. Birkinbine, aided by Messrs. Neal and other members of Councils. But that we presume is still fresh in remembrance. The following extract from Mr. Birkinbine's annual report, made at the close of the year 1858, presents a fact which will be new to our readers:

"The first six months of this year there was 17,079 feet of pipe laid, which cost, including making and setting of stops, fireplugs, and every expense, pipe, lead and castings excepted, $10,453 24, or 61.20 cents per foot; and from the first of August to the present time there has been laid 55,045 feet of pipe, including all expenses for labor, making and setting stops, fireplugs, &c., material only excepted, at a cost of $15,697 82, or 28½ cents per foot."

The difference caused by an efficient, skilful and economical administration is here accurately represented. Under democratic rule it costs 61.20 cents per foot to lay water pipe, and under the People's party 28 cents. We cite these facts in view of the approaching municipal election, for this admirable organization of the water department depends entirely on the political complexion of Councils. Should the democrats recover sway there, they will, of course, oust these officers, and put back their worthless old hacks again, or seek out others equally objectionable. This water department challenges the scrutiny of citizens. It has been conducted with an eye solely to the public good, and the people, who desire nothing better, will no doubt know how to attest their appreciation at the polls on election day.

City Councils.—We give a full list of the Councils, with the newly elected members:—

SELECT COUNCIL.

Ward.		*Ward.*	
1	Stephen Benton, D.*	13	William Neal, P.*
2	Oscar Thompson, P.	14	O. P. Cornman, P.
3	Thomas P. Norman, D.*	15	Henry Davis, P.*
4	John K. Loughlin, D.	16	George Read, P.
5	Wm. H. Drayton, D.*	17	John B. Lemon, D.*
6	O. H. P. Parker, P.	18	John H. Bringhurst, P.
7	Wm. Bradford, D.*	19	Thos. R. Bartolett, P.*
8	Theodore Cuyler, D.*	20	James Peters, P.*
9	J. P. Wetherill, P.*	21	Charles T. Jones.*
10	John M. Ford, P.	22	Arch. McIntyre, P.
11	Danl. S. Beideman, D.*	23	Wm. M. Smedley, P.*
12	S. Snyder Leidy, P.	24	D. C. Enos, P.

* Newly elected members marked with a star.

People's members 16, Democrats 8.

COMMON COUNCIL.

Wards.		*Wards.*	
1st.	Charles S. Dunk, P.	13th.	Jonathan Bullock, P.
	John A. Houseman, P.	14th.	Charles B. Trego, P.
	Jacob Stinger, Sr., P.		Wm. B. Thomas, P.
	Abraham Stewart, P.		Jonathan B. Pugh, P.
2d.	E. Ward, P.		Isaiah G. Stratton, P.
	James Kelch, P.	15th.	Thomas Potter, P.
	J. R. Tyson, P.		J. D. Ninesteel, P.
	Oliver P. Waite, P.		Geo. F. Gordon, P.*
	John K. Laughlin, P.		Morris Davis, P.
3d.	Andrew Miller, D.		Robt. J. Foulon, P.
	E. C. Quinn, D.	16th.	Joseph Sites, D.
	John Thompson, D.		H. D. Dickson, D.
4th.	George Shock, D.		James B. Foust, P.
	Alexander Martin, D.	17th.	Patrick McBride, D.
	David McClain, D.		James Justice, D.
	John D. Hazel, D.		C. B. F. O'Neill, D.
5th.	Wm. M. Baird, D.		John Bassler, D.
	John Cassin, D.	18th.	Ahab Hunter, P.
	William Lane, D.		Andrew Zane, Jr., P.
6th.	John Y. Ricketts, D.		Joseph R. Dye, P.
	Thomas Fisher, D.		John Dorlan, P.
	E. B. O'Brien, D.	19th.	John Deers, P.
7th.	Wm. A. Ingham, P.		J. D. Eldridge, P.
	Lewis S. Heins, P.		John Graham, P.
	Peter Bobb, Sr., P.		James House, P.
	John W. Leigh, P.		Mont. Johnson, P.
8th.	A. Hogdon, P.	20th.	John Craig, P.
	A. J. Harper, P.		Wm. J. Howard, P.
	W. Summers, P.		Geo. W. Simmons, P.
9th.	Evan Randolph, P.		William Eckfeldt, P.
	S. H. Case, P.		Jos. Manuel, Jr., P.
	D. G. Thomas, P.	21st.	John Bowker, P.
10th.	Wm. P. Hacker, P.		John Dyer, P.
	Wm. L. Dennis, P.		A. S. Huber, P.
	J. W. Pomeroy, P.	22d.	Matthias Hass, P.
	S. L. Cresswell, P.		Alfred C. Harmer, P.
11th.	Wilson Kerr, D.		Wm. R. Wistar, P.
	Lewis C. Pierce, D.	23d.	Charles W. Deal, D.
	R. G. Lanning, D.		Jonathan Brooks, P.
12th.	Francis B. Warner, P.		George Adler, P.
	Brock Watson, P.		Joseph Mills, P.
	Watson Malone, P.	24th.	Joseph S. Riley, P.
13th.	Geo. W. Gamble, P.		A. G. Cattell, P.
	George R. Oat, P.		
	Thomas P. Sterr, P.		

Peoples' members, 64. Democrats, 24.

*Uncertain.

†The third member in the Twenty-fourth Ward is doubtful, there being a tie between Messrs. Garvin and Keffer, both Democrats.

The Management of the Fairmount Water Works.

To the Editors of the Sunday Dispatch:—The undersigned would respectfully submit to the consideration of an intelligent public, through your valuable paper, a statement of facts as connected with his recent discharge from a situation as engineer at the Fairmount Water Works, in order that he may vindicate his character from the aspersions that must of necessity attach to it by the course the Chief Engineer, Mr. Birkinbine, has seen fit to pursue towards him, and that the public may know something of the despotism that prevails in this professedly democratic and free country. Having received an appointment as an engineer at the Fairmount Water Works last July, upon the recommendation of a number of the most respectable and worthy gentlemen of the city, I entered upon the duties of the same on the first of August, and from that time until the first of April was engaged every day in their faithful performance. I never heard from Mr. Birkinbine a word of censure in that respect, but frequently heard expressions of entire satisfaction and approval. And as I have been, as already stated, summarily discharged, it is but right and proper that all concerned should know the cause of my removal.

Be it known, therefore, that soon after my appointment I designed a self-acting airing apparatus for the purpose of keeping the air continually renewed in the air vessels of the pumps at the Fairmount works, thereby keeping them in the best possible working condition, and saving all of the labor, loss of time, and the wear and tear of machinery consequent upon the present mode of airing the pumps. Upon showing my plan to Mr. Birkinbine, he consented to my putting an apparatus up for trial, at my own risk and expense, assuring me that if it succeeded it would be adopted. I accordingly put one up, and it performed perfectly, and was in successful operation for over three months. Mr. Birkinbine expressed himself satisfied, and advised me to apply for a patent, saying he would do all he could to secure its adoption by the Water Committee. But after a lapse of three months, during which time he offered a variety of excuses for postponement and delay, he stated that the Water Committee were indifferent about the matter, and he did not know what would be their judgment, or when they would decide. Whereupon I determined to see each member of the Water Committee to explain my improvement to them, in order to secure some decisive action. I accordingly called upon a member, and, after stating my business, he expressed great surprise that Mr. Birkinbine had never brought the matter before the committee, which statement also surprised me exceedingly, as I had been led to believe from Mr. Birkinbine's remarks that the matter had been with the committee for some time, and that it was owing to their indifference that nothing was done.

In the course of the interview, in answer to questions as to how we were getting along at the Works, &c., I gave to this member a truthful statement of the occurrences which had taken place at the Works; and as my statements did not correspond with the representations made by Mr. Birkinbine to the Water Committee touching the same matter, it was apparent that one or the other of us had grossly misrepresented and falsified the facts. What occurred at the meeting of the Committee I cannot of course state, but immediately after Mr. Birkinbine asked me if I had been to see any member of the Water Committee, and upon being answered affirmatively, he stated that I had no business to go and see a single member of the Committee; that I should have sufficient confidence in him to have intrusted any communication for that Committee to him; that, in doing as I had done, I had placed him in a very *awkward* position, had done him a serious injury, and myself also. He said that he had appointed me, and expected me to sustain him, and that if I did not do it, he must appoint some one that would, &c., &c. This happened in March; and on the 1st of April I received a note from Mr. Birkinbine informing me of my immediate discharge, and demanding me to vacate the house I was living in instantly; and in order to coerce me into submission, he refused to give me my warrant for my last month's pay until I should move.

But finding that in this respect he was not sustained, he sent me word, after ten days, that I could have my warrant by calling after it. In the meantime he had my self-acting airing apparatus removed, notwithstanding it was operating perfectly; and in a few days after another contrivance of his own was substituted in its place, which for these last three weeks he has been trying to make operate, but has utterly failed, and must of necessity fail, as any schoolboy of ordinary proficiency could inform him, without trying a foolish experiment at the city's expense.

From the above-mentioned state of facts, regarding myself as grossly wronged, I petitioned Councils, on the 5th of April, for a full and a fair hearing. That body referred my petition to the Water Committee, which committee came to no definite conclusion as to whether they had jurisdiction in the matter or not. When their term of service expired, I again petitioned the present Councils. They referred the matter to the Water Committee, with instructions to give me a hearing and report, but the committee have taken the responsibility to refuse me a hearing, and reported the same to Councils and asked to be discharged, which request was granted by that body. Now, Messrs. Editors, being conscious of doing nothing that merits the treatment that might perhaps be accorded with propriety to a worthless vagabond, a drunkard, or a thief, I cannot help but feel aggrieved under the circumstances; and as all that I ask is a full and a fair hearing, it seems to me that insult is added to injury by refusing it to me; and as a last resort, I am obliged to appeal from those who are afraid of the truth, to the people who want it. Yours, respectfully,

JOB R. BARRY,

Late an Engineer at the Fairmount Water Works.

S.D.P.

Chief Engineer of Water Works.

PHILADELPHIA, June 14th, 1859.

To the Editor of the Evening Journal:

DEAR SIR,—I have noticed with extreme pleasure the announcement by the daily papers, of Mr. Frederick Graff's intention to become a candidate for the office of Chief Engineer of the Water Department of this city. We have among us no one so eminently qualified for this position, requiring as it does, a man of scientific attainments, particularly as a Mechanical and Hydraulic Engineer. Mr. Graff has gained an enviable reputation for practical and theoretical knowledge in these branches, and is consulted, and esteemed high authority, by corporations and individuals throughout the Union.

The experience acquired by him under his late, lamented father, to whom we are indebted for the elegance and utility combined in the design and erection of our Fairmount Water Works, and during his own superintendence of the same, has given him a thorough understanding of the business of the office.

His close application as a student of engineering, architecture, and many kindred arts and sciences, joined to his integrity and high character as a man, render him altogether a most suitable candidate for this very responsible post; and I trust the advantage of having it filled by one possessing so much ability, may be seen, felt, and acted on accordingly, by those controlling the election, without regard to party, or political favoritism. This office, at least, should be free from all such influences.

Very respectfully,

OLD CITIZEN.

SCARCITY OF WATER.—The people of the Twenty-fourth ward are great sufferers from the neglect of Councils to comply with the recommendation of the Chief Engineer of the Water Works, and erect a suitable reservoir west of the Schuylkill. For five months of the hottest part of last year, the valve which ought to have kept the water in the stand-pipe from flowing back upon the pumping engine, was defective, and caused the supply to give out three or four times a week; and with the approach of warm weather the water works promise to be equally deficient this year. On Saturday the Twenty-fourth ward was without water from the public works; on Sunday the pipes gave a small supply during part of the day, and yesterday there was again no water. To rig up old and abandoned pumps, and carry water, in some instances, for squares, to supply the demands for the customary ablutions of Saturday, or the still greater needs of wash day, is no light labor, and, if the people choose to enforce their rights in suits against the city for damages, might prove no small expense to the public treasury. The people west of the Schuylkill have paid liberally for laying water pipes through the streets, and are heavily taxed, in common with the citizens of other wards, for water rent, and it is but justice to furnish them with a constant and reliable supply. The prospect of another summer like that of 1858, in this respect, fills them with alarm, and we understand that a public meeting will be held this week in the Twenty-fourth ward for more efficient and combined action to secure a supply of this great necessary of life.

[For the Evening National Argus.]

THE EGOTISTICAL, ARROGANT ASSUMPTION OF OFFICIAL INCUMBENTS.

Among the mean and petty tricks resorted to by individuals to impose a notion of their importance and knowledge upon the public, there is none more contemptible than that self-conceit and studied importance which certain city officials practice.

A man who has knowledge of his official duties and dignity of character never gives himself any concern about having his name eternally in public print, as suggesting this and that, what he has done and going to do, until his name has become a perfect bore, and he is laughed at for his silliness, or it is wondered how he can make such a fool of himself. If an individual really be wanting in all the essentials which compose real knowledge of the official duties of his office, he will put on airs, and thus endeavor to convey an impression of his assumed abilities and importance. All this, however, is entirely futile. The ass is no less an ass because he attempts to disguise himself in the skin of the lion; and could this individual but see himself as others see him, his impudence, arrogance and self-conceit would be laid aside as qualities that are unavailable for their purpose. Every individual comes into the world with a peculiar organization. There is some things for which he is peculiarly fitted, and there is some things he is entirely unfitted for. Such is the perverseness of human nature that unfortunately an individual seldom values himself for that which he can properly do, but chooses continually to attempt that which he cannot perform. The consequence is imbecility, mortification and regret. Some men, while they remain in private life, attract little attention. The lack of notoriety dissatisfies them, and Heaven and earth are moved until they reach a position in which their stupidity and ignorance becomes conspicuous. Haughtiness is then assumed, and insolence is made to supply the place of knowledge and urbanity. If a man has but little calibre, the worst thing he can do is to accept a public office which he is incapable to perform the duties of without having to be puffed, for that only renders his follies conspicuous. Such an individual unfortunately at present occupies the head of the Water Department of our city.

Respectfully, yours,

AQUA.

The Fairmount Water Works.

[For The Press.]

MR. EDITOR: I am pleased to find that public attention has been drawn, through the columns of your paper, to the work of destruction which has been commenced at Fairmount, by blasting the rocks which support the reservoir, for the purpose of procuring building material to erect a new wheel-house upon the mound dam.

It is a matter of surprise to every intelligent person that Councils should have given such a hasty sanction to the proposed plan of extension, involving, as it does, unnecessary expense, besides endangering, in all probability, the safety of the works and seriously impairing the beauty of the grounds.

The report of the engineer, upon whose recommendation this plan was adopted, if examined with ordinary care, will satisfy any one that the new building is not needed. All that report proposes to accomplish can be attained at the same expense, and much more efficiently, by substituting turbine wheels, in whole or in part, for the breast-wheels at present in use. If an entire change is made in the wheels, the capacity of the works can be increased to 2 7 their present limit. If no greater change is made than can be effected by the expenditure of the amount proposed in the engineer's report, the result will be the same as by the method adopted, while the grounds will be saved from spoliation, and any question which may arise as to the security of the dam entirely done away with. A glance at the report of Mr. Birkenbine, for 1859, will explain this.

In the wheel-house there are at present eight breast-wheels, each fifteen feet in length, and one turbine of seven feet diameter. It is apparent, therefore, that so far as space is concerned, each of these breast-wheels might be replaced by two turbines of the size of the one now in use; and as the efficiency of the turbine is one-third greater than that of the breast-wheel, there would be a consequent increase of the capacity to two and two-thirds their present daily supply. The present capacity of the works is set down by Mr. B. at 12,000,000 of gallons per day. We should, therefore, have a capacity equal to 30,000,000 daily, being 18,000,000 more than the average daily consumption in the month of July, when the consumption is greatest. This, it will be seen, is the utmost limit of supply with the existing wheel-houses.

Now, let us see what Mr. B. proposes to do with the new building. He recommends the replacing of one of the old wheels, No. 4, with a turbine and *two* pumps, and the erection in the new house of two additional turbines and four pumps, each wheel to be of one hundred-horse power, while the old wheels have a power only of from thirty-five to forty horses. Here is an increase upon each wheel of one hundred and fifty per cent. of power, and of consequent efficiency; and it would seem to me that the first question which such a proposition would suggest would be something like this: "How is it, Mr Birkenbine, that you replace one wheel by a turbine, to get an additional power equal to sixty horses, and then stop short in your process of substitution, and require us to build a new house to accommodate your two remaining wheels, when the replacing of four more of the old wheels with turbines would give the same result?" To this question there could have been no sufficient answer given.

The cost of these turbines Mr. B. says, is $14,000 a piece. The cost of the new building is ESTIMATED at $15,000. The cost of new mains, connections, etc., rendered necessary by the erection of the new house is $7,000. So that if the money which is to be expended in building, mains, etc., were expended in substituting turbine for breast-wheels, it would nearly, if not quite, pay for two additional turbines. Upon the basis, therefore, of the proposed expenditure by Mr. B., let us see what would be the comparative result of the two plans.

The present capacity of the works, with eight breast-wheels and one turbine wheel, is 12,000,000 of gallons per day, at the maximum; the breast-wheels being each equal to a supply of about 1,300,000 per day, and the turbine wheel, with a single pump, to about 1,700,000 per day. If wheel No 4 is replaced by a turbine with two pumps, its capacity will be doubled, or equal to 2,600,000 gallons per day, and the two additional turbines will yield about 5,200,000 per day. We shall then have—

1 turbine, with single pump, yielding	1,700 000
7 breast-wheels " " "	9,100,000
3 turbines, with two pumps, "	7,800,000
	18,600,000

Mr. Birkenbine's estimate of the result is from sixteen to twenty millions daily, although he does not give us the mode by which he arrives at the result.

Now, let us see what will be the effect of expending the same amount in the substitution of turbine for breast-wheels in the present houses. By this mode we would have—

1 turbine, with single pump, yielding..	1 700,000
3 breast-wheels, " " "	3 900,000
5 turbines, with two pumps, "	13,000,000
	18,600,000

Precisely the same result, and with this for their advantage: The turbine is unaffected by the tides or by freshets, so that while the breast-wheel is idle from four to six hours in each day, the turbine is constantly in operation. In the case of freshets this advantage is even greater. The wheels at Fairmount have been stopped for forty hours together from this cause, which is equivalent to a loss of twenty millions of gallons, nearly the amount of two days' consumption in the summer season, or one-half the entire content of the reservoirs.

There is another point of view in which the utility of the turbine, and the inutility of the new house, is still more apparent. In seasons of drought the capacity of the works is limited by the supply of the water to ten millions per day, with the present apparatus. Now, it is apparent to every one, that to increase the number of wheels without increasing the supply of water-power, adds nothing to the capacity for supply at such times. Either nothing is gained, or else some of the old wheels must remain idle while the new ones do the work, and the only gain there is, is due to the superior efficiency of the new wheels. Hence the most economical mode of accomplishing this result is by the *substitution* rather than the *addition* of turbine wheels.

With the foregoing facts and estimates, it is hard to understand how the city authorities should have permitted themselves to be led into sanctioning such a plan as has been adopted. Even if Mr. B.'s report had not contained within itself the basis for forming a competent judgment upon the matter, the superiority of the turbine wheel, its compactness and economy, are so well known, that we should have supposed some inquiry would have been made, as to the necessity for new buildings, before any step was taken. I trust it is not too late to stop the ravages of bad taste and hasty judgment at Fairmount; and we earnestly but respectfully call the attention of Councils to this matter.

CITIZEN.

Scotch verdict of "not proven."

[*For the Philadelphia Daily News.*]

Heads of Departments—About Water Basins.

Mr Editor:—The time is approaching when the Councils of our City will be called upon to make appointments to the heads of the different Departments, a matter in which all good citizens must feel a deep interest, and look forward with a hope that our City Guardians will be governed by wisdom in making their choice of men, as regards qualification and fitness to fill the different positions to which they may be called.

The future prosperity of the City depends in a measure on these appointments; and the party in power, if they wish to retain the management of the affairs of the City, must devote their energies to reform the many abuses so loudly complained of in some of the former appointments. They will again be beset with a flood of applicants for office, many of whom, no doubt, are disqualified to fill the position they ask.

Good men should not be displaced simply to make room for others, unless it is certain they are better qualified for the position, and the public interest will be better served.

Improvements are now in progress, with which it would be unwise to interfere; and in the event of a change in the heads, would, without doubt, subject the City to great loss, and delay in the prosecution of the improvements in hand.

For instance, the Water Department. The improvements now being made for the better supply of water is of great importance to the City; it is the commencement of a system which should have been adopted in the first organization of that Department after consolidation.

The idea of supplying one general system of distribution from reservoirs of different altitudes, is novel, and shows a want of knowledge in Hydraulic Engineering, which is inexcusable. The Reservoir now being raised, should, when constructed, have been made to correspond in level with those of one or the other of the works, as it could have no distinct distribution.

The plan now adopted will admit of dividing the City into Districts, having each its own water circulation and reservoir separate. For instance, the Districts south of Callowhill street can be well supplied for many years from the works now being improved in connection with the Spring Garden Works, and as those works will not supply the high Northern portions of the upper District it will be necessary at no distant period to construct a reservoir of large dimensions upon the highest ground in the District, that will cover and supply the entire District, and furnish water to the lower reservoir in case of need.

It must be evident to all who are conversant with the subject, that reservoirs of different elevations, supplying the same distribution, must act unequal, and draw the largest amount of water from the one most elevated, and decrease the flow from the other, unless the difference in the length of mains is such as to increase the friction in the conduit equal to the difference of the hydrostatic head, which is not the case in the reservoirs alluded to.

The effect of the present operation can be made manifest by closing all outlets from the distribution, which would cause a transfer of water from the highest to the lower reservoir through the distributing conduits, until it finds its level or overflows the lower reservoir.

It would be difficult to determine what was aimed at in the last constructed reservoir for the City, unless it was to act as a feeder to the lower ones; this in my opinion would not be good policy after expending extra power to raise the water the additional height, as the hydrostatic effect would be lost to the distribution equal to the difference of elevation, by letting it down to the reservoir below.

The former heads of the Water Department seemed to think it was unnecessary to provide for the growing demand for water, for which neglect the present head of that department is now applying a remedy, and in the height of which I would ask, would it be prudent to derange the places by changing the head before the improvements are completed? The answer of all whose minds are unprejudiced will be no.

AN OBSERVER.

tortion he is charged with was of a character showing great wrong.

Angelique Brinckle applied for release from a charge of breach of the peace. It was stated that she was arrested under the name of Denny, but sued out a writ in the name of Brinckle. Mrs. Sleeper, who keeps a boarding-house at No. 735 Spruce street, said that the relator moved next door to her for the purpose of annoying her. On one occasion she spat upon her from the window; on another she accosted her in the street, and charged her with harboring her husband. At the Americus ball she laughed contemptuously at her; and she sent anonymous insulting letters to her.

On cross-examination the witness said Mr. Brinckle boarded with her, and the relator claimed he was her husband; she had never injured or threatened her person; did not live near her now, but was frequently sneaking about the house and prying into the windows.

J. G. Brinckle, of the bar, sworn—I've heard the remark made by the woman calling herself Angelique Brinckle about my being her husband; it is not true; I knew her husband; am familiar with her handwriting; she learned to write after I became acquainted with her; (letters shown;) that (held up by the counsel) I know to be her's; (it was handed to the Judge, and he read it;) I am boarding with Mrs. Sleeper, and from what I know of the relator I believe Mrs. Sleeper's life to be in danger; the relator is not my wife; years ago I made a settlement with her; gave her money and other property, upon the express understanding that she would not extort any more money from me or give me any kind of annoyance; while I was in company with Mrs. Sleeper on Sunday last, in Walnut street, near Sixteenth, the relator came up, and used very offensive language to the lady; the thing has been going on for months and months, and Mrs. Sleeper has been subjected to much annoyance; I have been a lodger with Mrs. Sleeper since 1869; she has been subjected to such annoyance that she has had spells of sickness.

Cross-examined—I have known the relator since 1855; she was a married woman when I became acquainted with her; some of the letters received from her were written by her; the others are in a disguised hand; I have been endeavoring to discover who wrote them.

Counsel for the relator—Are you counsel for Mrs. Sleeper?

I am not, but I feel concerned because she is subjected to annoyance on my account. The relator has commenced proceedings in divorce, but she knows we were not married. There was a time when, as a matter of humanity, I suffered this woman to pass as my wife. I never addressed her as my wife in the society of others. When I desired to get rid of her I found it impossible to shake her off.

Mr. Katz, counsel for the relator, said that the testimony did not make out such a case as the Court could take notice of. There had not been threats to do personal violence, and all that had been testified to were little annoyances growing out of jealousy, Mrs. Sleeper being jealous of Mrs. Brinckle and Mrs. Brinckle of Mrs. Sleeper. It was no wonder that Mrs. Brinckle felt annoyed when she found Mrs. Sleeper walking on the street with her husband.

Mr. Bonham (for Mrs. Sleeper) said that Mrs. Denny who goes by the name of Mrs. Brinckle, had not only made threats to do personal violence, as the letters showed, but had rendered herself liable to a prosecution for assault and battery. Mr. Brinckle had avowed that there was no connection between him and the relator. He had severed what connection there had been—had settled with her; had given her money and two brick houses; but it had not relieved him of the annoyance. Mrs. Sleeper is a lady in every sense of the word, and she asks what she had a right to receive—the protection of the law. We might ask your Honor to bind the relator over for assault and battery, but we do not do it.

Judge Paxson asked at what sum the bail of the relator had been placed by the magistrate.

"One thousand dollars," was the reply.

Judge—Well, she must give bail in one thousand dollars to keep the peace and be of good behavior for one year.

The bail was promptly entered.

PROPOSALS FOR CAST-IRON SERVICE PIPE, IRON AND BRASS CASTINGS, LEAD, AND TWENTY-INCH MAIN.

SEALED PROPOSALS will be received at the office of the Water Department, No. 104 south Fifth street, until TUESDAY, February 2, 1869, at 3½ o'clock P. M., for the following articles, delivered at such points in the city as the Chief Engineer may designate, free from government tax:

First—Cast-iron service pipe, by the pound, as follows:

12,000 feet pipes, of four inches diameter.
48,000 feet pipes, of six inches diameter.
600 feet pipes, of three inches diameter.

Also, 3000 feet of mains, of twenty inches diameter, to be paid from loan of December 26, 1858.

Also, 65 000 pounds or more of branches, sleeves, &c.

All patterns to be furnished by the contractor, and to be approved by the Chief Engineer.

No allowance will be made for any metal in the pipes, branches, &c., five per cent. above the specified weights

Second—225,000 pounds of iron castings for the work shop, for making of stops, plugs, &c., from patterns approved by the Chief Engineer, or furnished by the Department.

Third—10,000 pounds of brass castings for the workshop, for ferrules, plugs, stops, &c., from patterns furnished by the Department.

Fourth—55,000 pounds of lead, for laying pipes.

Plans and specifications can be seen at the office of the Chief Engineer.

All pipes to be cast vertically.

All pipes, branches, &c., are to be coated with coal pitch varnish, in accordance with the memorandum to be had at the office.

All pipes and castings shall be subjected to such tests and inspection as may be considered necessary by the Chief Engineer to insure a correct judgment of the quality of the material and workmanship.

No bids will be received except from persons manufacturing the articles bid for, and unless it be accompanied with a certificate that a bond of five hundred dollars has been deposited with the City Solicitor, as per ordinance of May 25, 1860.

The Committee reserves the right to accept or reject any or all of the bids.

No proposal will be received unless written upon the blank forms furnished by the Department.

FREDERICK GRAFF,
ja28 3t Chief Engineer Water Department.

THE SALT WATER PROJECT.

Details of the Plan for Extinguishing Fires and Washing Streets with Sea Water—Report of the Engineer of the Board of Health.

At the meeting of the Board of Health yesterday the following report of the Engineer of the Board was read, giving the details of the plan, some time since outlined in these columns, for extinguishing fires and cleaning the streets with salt water:

OFFICE OF THE ENGINEER,
METROPOLITAN BOARD OF HEALTH,
NO. 301 MOTT-STREET,
NEW-YORK, Oct. 13, 1869.

Colonel Emmons Clark, Secretary Metropolitan Board of Health:

SIR: In compliance with the resolution of your honorable Board, "That the Sanitary Engineer be and is hereby directed to report to this Board a plan by which the streets of New-York may be flushed daily with sea water, with estimated expenses of the work, and such other facts and details as he may deem important," I herewith submit the accompanying report and plan:

REPORT.

In consideration of this subject, as the scheme is a perfectly practicable one, the question resolvs itself into how can the plan be carried out most economically, both in first construction and in maintenance; how many pump districts is it best that the City should be divided into. The smaller the districts the less the length of main and branch pipes dependent on one pump, the less the diameter of the pipes and their consequent cost; but the number of engines and stations will be more, the cost of real estate greater and economy in working engines less. Without applying the test of actual estimate and plans, I have settled upon the plan of the division of the City below Fifty-ninth-street into two districts, the one below and the other above Fourteenth-street, with a pumping-engine station to each, the lower one at the corner of Canal and Walker streets, the upper at the Croton Reservior, on Fortieth-street, the general principle being that a central engine would distribute the water on either side of it with the same mains and pumps that would be served by two marginal or river stations that would distribute but to one side; the water to be conveyed to the pumping stations by brick conduits, delivering, by gravitation, into wells. Both pumping stations have other features to recommend them besides their central positions in their districts. On account of the low level of Canal-str et, between Centre-street and North River, t e influent conduit can be constructed at compar tively small expense; and the angle of Ca and

ceed to give the cost of construction by estimate and in items, that those conversant with th se matters may judge of their correctness. Real estate and buildings, $125,000; stand pipe, $50,000; two engines and boilers, $100,000 each, $200,000; stand pipe, $20,000; 53,500 feet twenty-inch pipe at $8; 42,250 feet sixteen-inch pipe at $5 60, $236,100; 105,000 twelve-inch pipe at $3 60, $378,000; 105,700 eight-inch pipe at $2 20, $232,540; 36,200 six-inch pipe at $1 70, $61,540; 1,029 hydrants at $45, $46,305; gates, $5,000—$1,782,985, or say in round numbers, $2,000,000. The gross running expenses, estimated on the basis of the cost at the Ridgewood pumping engines, Brooklyn, would be about $30 per day; seventy six men at $2 per day, $152; total $182. The total expense of maintaining the force during the whole year and when not employed in flushing, attending to cleaning crosswalks, removing snow and the like, together with the entire pumping expense and that of superintendence and repairs would not probably exceed $65,000; thus affording a more cheap and effectual means of cleanliness than any now in use. In the district above Fourteenth-street, that is, between Fourteenth-street and Fifty-ninth-street, the numbers of miles estimated by the length as given in figures in the Directory, I find to be 117.4 miles, and the number of hydrants, placing one at each intersection of street and avenue, and one intermediate in the block is 1,106. By comparison of these figures with those at the district below Fourteenth-street, the difference is so small, that it will be perfectly safe to consider the water supply the same in both districts, and the pumping engines of same capacity. In fact, taking into consideration the condition of the streets and the purposes to which the edifices are applied, the water demand both for flushing and fire purposes should be less in the upper than in the lower; the pumps would therefore be of the same pattern as those in the lower district; but as a stand pipe might be an objectionable feature at the reservoir, it is proposed to put up an elevated tank over the central façade, either on Fortieth-street or Fifth-avenue, as shown in the vignette on the plan, which should be at sufficient height for the flushing service, and an arrangement of valves and air chambers by which the water pressure might be increased to any desirable extent in case of large fires. From the tank or rising main a twenty-four-inch main is laid through Fortieth-street to Lexington-avenue on the east, and Ninth-avenue on the west. From these points the distribution is by twenty, sixteen, twelve, eight and six-inch pipe, as in the lower district. The estimate of cost is as follow: Alteration beneath reservoir necessary for the reception of pumping engines and boilers, and coal space and chimney, $25,000; tunnel to East River, 4,200 feet, $20—$84,000; two engines and boilers, $100,000—$200,000; tanks and supports, valves and air ambers, $30,000; 5,025 feet twenty-four-inch

Contnued on 153

PROPOSALS.

PROPOSALS FOR CAST IRON MAINS FOR THE WATER DEPARTMENT.

—Sealed proposals will be received at the office of the Water Department, No. 104 south FIFTH Street, until April 14, 1868, at 3½ o'clock P. M., for the following cast-iron mains:

200 lengths of 12 feet each, of 10 inch internal diameter; average weight 750 pounds each, marked A.

130 lengths of 12 feet each, of 12 inch internal diameter; average weight 980 pounds each, marked A.

115 lengths of 12 feet each, of 16 inch internal diameter; average weight 1260 pounds each, marked A.

1250 lengths of 12 feet each, of 20 inch internal diameter; average weight 1815 pounds each, marked A.

112 lengths of 12 feet each, of 20 inch internal diameter; average weight 2675 pounds each, marked A.

860 lengths of 12 feet each, of 20 inch internal diameter, average weight 1815 pounds each, marked B.

350 lengths of 12 feet each, of 30 inch internal diameter; average weight 3464 pounds each, marked B 1.

100 lengths of 12 feet each, of 30 inch internal diameter; average weight 3800 pounds each, marked B 2.

190 lengths of 12 feet each, of 36 inch internal diameter; average weight 4600 pounds each, marked C 1.

100 lengths of 12 feet inch, of 36 inch internal diameter; average weight 4900 pounds each, marked C 2.

With the curves, branches and sleeves necessary for laying the same.

The 10, 12, 16 inch mains, marked A, are to be delivered at Manayunk.

About one-half of 20-inch, marked A, are to be delivered at Manayunk.

About one-half of 20-inch, marked A, are to be delivered at or near Mt. Airy Station, Germantown Railroad.

The 20-inch, marked B, are to be delivered at some convenient wharf on west side of the Schuylkill.

The 30-inch, marked B, are to be delivered on Schuylkill, near foot of Montgomery avenue.

The 36-inch, marked C, are to be delivered at or near Schuylkill Engine House or Schuylkill Reservoir.

Subject to such changes in points of delivery as may be found necessary hereafter.

No payment will be made for any metal in the pipes, braches or curves exceeding five per cent. above the specified weights, and no pipes will be received that are more than five per cent. under the weights named.

All the pipes to be cast vertically, with the bell end down.

All the pipes, branches, curves and sleeves are to be coated with coal pitch varnish, in accordance with the memorandum to be had at the office.

All the pipes and castings to be subjected to the tests named in the general specifications of the Department, said tests to be made at the expense of the contractor.

The proposals must state the minimum time required for the delivery of the whole contract, and the earliest date at which deliveries can be commenced. Bids will be received for a part or the whole, but if for a part must include all the pipes of any one of the classes named above.

All mains of twenty inches diameter and under will be proved to pressure of 300 pounds per square inch, all others to 250 pounds per square inch.

No proposal will be received unless written upon the blank forms furnished by the department.

The price must be named per pound.

No bids will be received except from persons manufacturing the articles bid for, and unless it be accompanied with a certificate that a bond of five hundred dollars has been deposited with the City Solicitor, as per ordinace of May 25, 1860.

The committee reserve the right to accept or reject any or all of the bids. FRED. GRAFF,
Chief Engineer Water Department.
April 7, 1868. ap8 3t

TO IRON FOUNDERS.

SEALED PROPOSALS will be received by the Watering Committee of the City Councils of Philadelphia, at the office of the Water Works, No. 200 Cherry street, until the 15th day of August, 1849.

For 1600 or more cast iron water pipes, not exceeding 1700, of 30 inches clear inside diameter, and one inch in thickness of metal.

For two four way branches, 30 by 20 inches.
For three do do 30 by 10 do.
For one do do 30 by 12 do.
For one do do 30 by 8 do.
For ten do do 30 by 6 do.
For one three way branch, 30 by 12 do.
For one do do 30 by 30 do.
For six do do 30 by 6 do.

For one reducing pipe, from 36 to 30 inches, ½ feet 6 inches long with a flange.

For sixteen or more curved pipes, 30 inches diameter, 8 feet long, radius of curve 50 feet or less.

For six or more do do, 30 inches diameter, 8 feet long, radius of curve 25 feet or less.

The pipes to be Nine feet in length, and what is termed spigot and fawcet joints, to be of uniform thickness, cast in a vertical position with the hub end down.

The average weight per pipe to be 3100 lbs. No pipe will be received that is more than five per cent under the above average. The whole of the pipes and castings to be made in a perfect and workmanlike manner, free from defects of any kind whatever, and must be of strong tough iron, such as will bear handling, drilling and cutting. The proposals must state whether the pipes are to be made of remelted or blast furnace iron, and if from the latter, must specify the locality from which the ores used are obtained.

All the patterns necessary are to be found by the contractor, and shall be fully approved by the agent of the Committee previous to castings being made from them.

The pipes, branches, and such castings as may require it, shall be proved in the city of Philadelphia, and will be subjected to a pressure of 200 lbs. per square inch, under the inspection, and to the satisfaction of the agent or agents of the watering committee.

The proposals must state the price per foot, running measure, for the pipes, and the price per ton for the branches, curves and other castings, delivered upon any convenient wharf within the limits of the city proper, either upon the Delaware or Schuylkill rivers, free from any charge for wharfage, at the following periods:

One half or more of the whole order on or before the first day of March, 1850, and the remainder as follows: On the 15th of March, 1st and 15th of April, 1st and 15 h of May, 1st and 15th of June, and the 1st of July; the whole order to be delivered complete on the first day of July, 1850.

Good security will be required for the performance of the contract. Payments will be made monthly after the delivery of each lot of Pipes and Castings, with a reservation of ten per cent. until the satisfactory completion of the whole contract.

The Committee reserve the right of rejecting any proposals they may disapprove. The proposal must state if the offer is made for the entire order, or if not, what portion of it is offered for.

Proposals to be endorsed "Proposals for 30 Inch Main," and be addressed to the undersigned.

By order of the Watering Committee.

FREDERICK GRAFF,
Superintendent Fairmount Works,
jy21 2aw t15A] 200 Cherry st., Phil'a.

Chemistry of a River.

The people of Philadelphia have been excited of late touching the condition of the Schuylkill river as the fountain from which a large population must look for its supply of wholesome water. Certain appearances in the river indicated to common eyes, as in the case of our own Croton, that the water had become foul, and it was presumed that this foulness was the effect of an excessive growth of some injurious plant. It was known that the river water at and above Reading was unfit to drink, and that no fish could live in it, all kinds except eels having long since disappeared. But it was also known that great revolutions had taken place among the finny inhabitants even as low down as Fairmount. These changes were as harmless, however, as they were curious, and were owing to the damming of the river at that point, to furnish power to force the water up into the basin. The building of the dam was followed by the appearance of several kinds of fish which had not previously been known in the river, and which took up their quarters in the slack-water above that work, where they have continued to increase and multiply. Other kinds as mysteriously evacuated the same locality, while the delicate white catfish, peculiar to the Schuylkill, and famous, with its collateral coffee, as the staple luxury of tavern and picnic along the shores of the river for a hundred years, has almost wholly disappeared.

125

The discussion growing out of the alleged impurity of the Schuylkill water has developed facts far more striking than any which the condition of the Thames or Croton has elicited. It has laid bare the chemistry of a vast river, showing how beautifully Nature carries on even her most colossal operations for the benefit of man. The great mountain feeders of the river flow into it ninety-four miles above Philadelphia, and within that ninety-four miles the river falls more than six hundred feet. Instead of the sluggish current of the Thames, it may be called a mountain torrent, subject to impetuous freshets which carry havoc along its banks. Why such a stream, so thoroughly purified from its very sources by these freshets at various times in the year, should be fatal to the fish in its upper waters, has been a puzzle to many. But the fact is so, nevertheless. Formerly they were alive with trout, but they, with all other kinds, down as low as Reading, have disappeared. The cause is simple and obvious—the coal mines have done it. A hundred and thirteen collieries are now in operation on the head-waters of the river, forty-seven of which are worked above the water-level, and sixty-six below it. From the slopes and shafts of these collieries, steam engines are pumping out, day and night, great volumes of water charged with sulphuric acid, and emptying it in the river. The shales and slates of the coal seams contain large amounts of sulphuret of iron, which is constantly oxydating, and generating sulphuric acid, by which the water is extensively impregnated.

In some cases this water is so highly charged with acid that the iron of the gangway railroads is consumed in a few months, requiring new rails. Breakers, screens, tools, and all iron things with which the acid water comes in contact, are speedily eaten up. The engines which raise it from the bowels of the earth are supplied with water brought at great expense from a distance, as the mine-water would detroy their boilers. Its ravages on machinery of all kinds occasion a heavy annual expenditure in mines worked below the water level. The stream thus poured into the Schuylkill impregnates the river for thirty miles below the mines. Freshets may suddenly change the body of water in the river, but they no sooner pass away than a new impregnation commences; and as the stream is here ordinarily small, it soon becomes general. All the tributaries of the river are thus acidulated, and from them, as well as from the river down to Reading, the fish have long since disappeared. At that city there were certain indications some weeks ago similar to those which recently alarmed us for the Croton. The water became of greenish blue, and was covered with an unsightly scum. But, while scarcely fit to use at Reading, it was entirely pure at Philadelphia, as below the former city the great tributaries enter the river, purifying all below them.

Above Reading the river enters the great limestone formation which has given to Berks and the adjacent counties their high agricultural position. It here receives the waters of Maiden Creek, which flows over a limestone bottom, and immediately the river water changes its appearance. The two streams, before they unite, are clear and transparent, but they no sooner mingle their waters than chemistry displays its wonders on the grandest scale. Maiden Creek, impure by being overcharged with lime, combines with the river, equally overcharged with sulphuric acid. These several impurities, having a strong chemical affinity, enter into combination, and render the whole stream perfectly pure, but destroying its transparency and giving it a milky or clouded appearance. The lime which is held in solution by the creek water unites with the acid which impregnates the river, and gypsum is the result, first rendering the water a bluish white, and then purifying it before it reaches Reading, by precipitating the gypsum to the bottom. It is probable that no natural laboratory of similar magnitude is to be found in any other part of the world. It is a beautiful example of the power of an ever-acting agency to make an entire river a blessing to the human species. With no acid from the coal mines to neutralize the lime, the populous city of Reading would be without a pure soft water for domestic purposes. Her factories, her furnaces, her engines, would otherwise have no means of safely using steam, except by costly Artesian wells. So the Schuylkill, without its limestone tributaries to neutralize the acid from the coal mines, would be unable to furnish pure water to the city of Philadelphia, or to feed the boilers of the twelve hundred steam engines which have made her so great a manufacturing centre. Considering that the Schuylkill is a mountain stream, with a precipitous channel, often completely purified by heavy freshets, and that its chemical condition is absolutely perfect, it is difficult to understand how our neighbors of Philadelphia can be alarmed for the purity of their water. On that score nature has done everything for them but to raise it to their lips; and having made it pure to their hands, it will be their fault alone if it does not continue so.—*N. Y. Tribune.*

OUR WATER DEPARTMENT.—We observe that the large water main is now being laid along Washington avenue, as authorized by an ordinance recently passed by the City Councils. When this work is completed, the people in the Southern part of our city will receive a full supply of water. Attempts are now being made by a few unscrupulous, selfish wire-pullers in the "People's party" to give credit of this vast improvement to Mr. Birkenbine, who is supposed to be at the head of the Water Department. The idea of this extension of the pipes was first promulgated by Mr. Graff while Chief Engineer of the Department, and it was strongly urged by Mr. Ogden, his successor. The seed sown in former years has thus taken root, and is now about maturing into full vigor of growth. The credit does not belong to the present Department. Had either Mr. Graff or Mr. Ogden been continued in office, the work would have been finished long ago. The people of West Philadelphia would also have had the proper kind of machinery to furnish them with a full supply of water for ordinary purposes, as well as in time of conflagration. It is not fair for one to wear the borrowed plumes of another. Honesty forbids it, modesty shrinks from it.

We understand that, at the recent primary election of the People's party, new men were placed on nomination avowedly for the purpose of reorganizing the Water Department in particular, and the other departments in general. Whether they will act in good faith remains to be seen, in case of their election. In the meantime we suggest the expediency of all good citizens voting for the Democratic candidates—elect them and the now badly mismanaged departments of the city will be thoroughly reorganized. We will then have a better supply of water, cleaner streets, and a more economical expenditure of the people's money.

We cheerfully make room for the following communication. It is in reply to an attack made by Mr. Birkenbine, through the columns of a soft little penny paper, which would have collapsed long ago but for the pap which it draws from the Sheriff's office—just sufficient to keep its head above water. Having been attacked through the agency of this scurrilous little affair, he undertook to reply through the same medium. But, as he happens to be a poor man, he was unsuccesful. He was told that he could publish it as an advertisement, by paying full price therefor. He inquired if Mr. Birkenbine paid for the publication upon him, and was politely requested to mind his own business. Let the workingmen take notice. This is not the first affair of this kind. Rather sharp practice that—to blackguard a poor man before the public, and then charge him for publishing his vindication.

[Communicated.]

In the report of the proceeding of Council in your paper of Friday, Oct. 7th, appears a communication addressed "To the Select and Common Councils of the city of Philadelphia," by the Chief Engineer of the Water Department.

The allegations regarding me, made by Mr. Birkenbine in his statement, will, (if believed,) injuriously affect my reputation as an engineer.

Councils viewing the Chief Engineer's communication as disrespectful, refused to receive it, and returning it to its author, gave him an opportunity to render it not only more courteous, but to remodel it more in accordance with truth. While now disclaiming any lack of respect to Council, Mr. Berkinbine still persists in his statement with regard to me.

Inasmuch as the *Daily News* is the only paper that has given publicity to the Chief Engineer's communication, I therefore solicit that you will do me the justice to give place to the following declaration by me to wit: That the statement of Mr. Birkenbine that he removed me for an "open act of insubordination," is utterly untrue, having not even a shadow of truth for its foundation. He removed me (and he knows it well,) *only* to gratify the vindictive feeling engendered in his bosom, by the evidence which under oath, I gave to the Committee investigating the affairs of the Water Department.

In his endeavors to fix on Mr. Barry the character of being quarrelsome, Mr. Birkinbine further states that before the Committee I had admitted that Mr. Barry had twice quarrelled with me, but that the testimony was suppressed. The facts of the case, render the members of the Committee abundantly able to protect themselves from such a charge of unfairness, and I would not have noticed it, were not my name dragged in by the Chief Engineer; I will therefore state, that the "quarrels" alluded to, were nothing more than discussions between Engineers Barry, Parker and myself, as to the proper degree of speed, at which the wheels should be worked. For several years I had been familiar with them, and I strenuously opposed the increased rate of speed at which my colleagues were disposed to run them. I satisfied Mr. Barry that I was right, but the other engineer (Parker,) persisting in his course, soon threw the turbine out of order, and two full months passed away before it could be put to work.

Had Mr. Birkenbine been equal to the duties of his position, he could have directed the rate of speed; but he did not, and it is my conviction he was too ill-informed to determine it.

In his communication to Councils the Chief Engineer speaking of me, says "while he was not in all respects such as I would have wished, yet from his character, &c., &c."

To this I reply that up to the period of the Council's Committee of Investigation, Mr. Birkenbine evinced not the slightest dissatisfaction with me, and he never had cause; for during the period he was my superior officer, I did my whole duty as an assistant engineer, and my deportment was that becoming a subordinate. But my connection with the Water Department being severed, works a material change in our positions, for now, in my capacity of citizen, I am, in a degree, at least, an employer of Mr. Birkenbine, and I herewith declare that if Councils will examine into the matter, they will learn the better truth, that not only no present necessity exists for the erection of the new wheel houses, but that machinery sufficient can be placed in the old wheel houses, to pump fully fifty per cent more water than the breast wheels now in use can supply.

In publishing the foregoing you will do an act of justice

To your obedient servant,
W. GARRETT,
Late Engineer at Fairmount Water Works.

E PHILADELPHIA

THE WORTHINGTON EN

THE CONTRACT FOR THE NEW PUMPING ENGINES AT THE WATER WORKS—INVESTIGATION BY HE COMMON COUNCIL COMMITTEE—NO BIDS RECEIVED—A ONE-SIDED DECISION.

Yesterday afternoon, at one o'clock, the Investigation Committee of Common Council, consisting of Messrs. Mitchell (chairman), Allen, Bardsley, Bowker and Kendrick, met at the Clerk's of Councils room, for the purpose of making further inquiries into the contract made by Mr. Graff, Chief Engineer of the Water Department, with Mr. Worthington, of New York, for the new pumping engines, required in the enlargement of the water works of the city.

The chairman requested Mr. Henderson, who made the complaint, to state his case.

Mr. Henderson said he had been for a long time trying to get a contract, and that he had sent three communications to Councils asking them to examine several duplex pumping engines of his own construction. The first letter never came before Councils until ten days after it was written. By the second letter a small number came down and examined the engine. I thought my patent engine was the best of the kind, and sold cheaper to the city than any outside engine. We think we can build a better engine here than in New York, and we wanted to make a bid for it, although we have never had a chance to do so. People should be allowed to make a bid and the contract should be awarded to the lowest bidders. The proposals should be advertised. I think there is a law requiring Councils to advertise and receive proposals for all work done for the city.

Mr. Bardsley was of the opinion that su was not the case for new work.

Mr. Henderson said the contract wa rded on the 6th of September, and the mon been paid yet.

Mr. Bardsley.—Yes, sir; it was appropriated two months before. It was approved on the 7th of July.

Mr. Mitchell.—Your communication was dated September 2, and that of the Norris Iron Company September 22.

Mr. Bardsley.—The Committee on Water authorized the contract on the 6th of September. It was awarded fourteen days before your letter was received.

Mr. Henderson.—I should like the public to understand that the Water Department does not see fit to advertise for proposals for work, but rather that all the power of dividing the work is given to one man. I should like our mechanics to know that they are under the complete control of one man.

Mr. Bardsley.—No contract is binding unless it is approved by Councils.

Mr. Henderson.—It is hardly worth while for me to continue any further. The whole matter appears to be settled according to the interpretation of the members of the committee.

Mr. Graff to Mr. Henderson.—Have you the right to manufacture these engines of yours?

Mr. Henderson.—Yes, sir.

Mr. Graff.—Have you not been notified by Mr. Worthington that you are infringing on his patent?

Mr. Henderson.—No, sir; I have never been told so by Mr. Worthington directly, but by some other parties.

Mr. Bardsley.—The communication you sent into Councils set forth the fact that the Norris Iron Works wanted to bid for this contract. Where are the Norris Iron Works?

Mr. Henderson.—At Norristown, sir; although I have nothing to do with that.

Mr. Bardsley.—If they are located in Norristown this contract would not benefit the mechanics of Philadelphia.

Mr. Henderson—I have nothing to do with them; I am for myself alone.

Mr. Eckstine, Clerk of Common Council, then read an article from The Inquirer of the 30th ult., giving a report of the last meeting of the committee, and also a communication signed T. T. Woodruff, Norris Iron Company.

150

Steam Fire Engine Trial.

Some time since the Common Council empowered Street Commissioner Cooper to have two steam fire engines built for the use of the city, which were to be ready for use before the close of the present year. In accordance with these instructions, Mr. Cooper advertised for proposals to build two steam fire engines, and the contract was eventually awarded to Messrs. Lee & Larned for $19,500. One of the engines has since been completed, and was tried at the Bowling Green yesterday at 3 P. M., in the presence of Street Commissioner Cooper and a number of the active members of the New York Fire Department.

This engine is, in fact, a street locomotive, and propels itself over any ordinary road or street. It ran down through the city from the Novelty Works with great ease yesterday, and was steered through the crowded thoroughfares without any accident transpiring. This is a novel feature in the construction of these engines in this country, as in Philadelphia they are dragged to the fire by men, and in Cincinnati by horses. An objection to these engines immediately suggests itself, and that is, that they cannot be brought to a fire quick enough if they have to remain in the house until the steam is raised; but it is the intention of its projectors to keep the steam up constantly, day and night, after it gets into active service.

The result of the trial yesterday was entirely satisfactory to the Street Commissioner. Nozzles of all sizes, from one to two inches, were tried, but as no measurement was made we cannot give an accurate table of the distances to which the water was thrown. Suffice it to say, that in the opinion of all who saw the trial this new engine did quite as well as the Philadelphia engine did in Wall street. The most extraordinary performance was a stream thrown from the top of a high building near Bowling Green, through a 1⅝ inch nozzle, which must have shot up at least sixty feet above the pipeholder. Two streams also reached a great height, probably 130 feet, through pipes with 1⅛ inch nozzle. The firemen and members of Engine Company No. 42 attended to the hose pipes, putting on the water and the like, and worked with a will. This company have petitioned the Common Council for a steam fire engine.

The total weight of this engine is about five tons. Steam can be raised to working pressure in from six to ten minutes; but it is intended that steam shall be kept up at all times, so that the engine may start at a moment's warning. This can be done at a moderate expense, compared with that of supporting a horse establishment for hauling the engine. When it reaches the fire the parallel rods are disconnected, which can be done in an instant, and the power then acts upon the pump alone. The pump discharges 4.6 gallons per revolution, and may be run with good effect at any speed, from 50 revolutions per minute up to 225. At its ordinary rate of working it will discharge from six hundred to seven hundred gallons per minute, through a single 1½ inch nozzle, or its equivalent in smaller streams, giving a velocity sufficient for a horizontal throw of two hundred feet and upwards. The power is derived from an annular steam boiler—a peculiar form of the upright tubular boiler—combining, in the highest degree, lightness, activity and strength. It contains 114 pairs of vertical tubes, arranged annularly, or one within the other—the outer of 2½ inches, and the inner of 1½ inches diameter—the annular space between the two being occupied by water. The furnace is composed of 1½ inch tubes, 120 in number, set close together, and opening into a steam drum above and a ring shaped water bottom below. Its height, from grate to steam drum, is 4½ feet. Height of steam drum, 18 inches; its diameter, 51 inches. Total height of boiler, 6 feet 3 inches. Grate area, 804 square inches; flue area, 214½ square inches; total fire surface, 460 square feet. The boiler has been tested under a steam preesure of 200 lbs., and is believed to be safe under a much higher pressure; ordinary working pressure, 120 lbs. The cylinders are of 7½ inches diameter and 14 inches stroke. The valves are operated by a stationary link and reversing lever, by means of which the steam may be cut off at any point in the stroke, giving the benefit of expansion in any desired degree, or may be instantaneously reversed. The connecting rods from the engines act on cranks, placed not as in locomotives, upon the shaft of the driving wheels, but upon an intermediate shaft, revolving in fixed bearings upon the frame, and operating the pump—a rotary force pump, of the largest size. From this the power is transmitted by a parallel rod to the driving wheels behind, the axle of which is kept at a uniform distance from the intermediate shaft by two strong arms, called radius rods, which take hold of each shaft near its ends. The moving parts of the engine are consequently undisturbed by the motion of the wheels, however rough the road may be, the power being accurately transmitted to them, whatever position they may take above or below the centre line of the cylinders. The frame or bed, of boiler and angle iron, is hung upon four strong springs running lengthwise, and one cross spring under the hinder axle. The two front springs, placed one above the other in the line of the centre of the carriage, take hold of a vertical spindle, connected with the forward axle by a kind of universal joint, and having at the top a horizontal crank, by turning which, by means of a winch and screw, the direction of the axle is controlled, and the carriage steered with great facility and precision. This engine generated much more steam than it could use.

EVENING BULLETIN.

FRIDAY, MARCH 19. 1858.

MADAME GAZZANIGA.

Her Life and her Professional Career.

It is a little remarkable that, notwithstanding the popularity of Madame Gazzaniga, the prima donna of the Philadelphia Italian Opera Company, no biography or account of her professional career has ever appeared in this country. We are able to supply the deficiency from a long and very florid account published lately in a Spanish paper at Havana. We omit the eulogistic superfluities, and give simply what appear to be facts.

Marietta Gazzaniga was born at Voghera, near Pavia, June 6th, 1826, and early showed talent for the lyric stage. When fifteen years old, her parents, who were suspected on account of their political opinions, had to remove to Milan, and there she had the advantage of musical instruction from Alberto Mazzucato, one of the best masters and critics in Europe. The date of her debut is not given, but it took place in the year 1843, at the Theatre of San Benedetto, in Venice, and her success was complete. From Venice she went to Milan, and in the Royal Theatre was received by an immense audience. Afterwards she appeared at Casale, Monferrato and Varese, and was rapturously applauded. All the theatres disputed the honor of possessing her.

In the year 1844, she sang at Lucca, in "Linda" and "Don Pasquale;" at Leghorn, in "Ernani;" at Florence, in "L'Elisir" and "Il Bravo," and again in Leghorn and Florence in "Nabuco," "Bonifacio di Geremei," and "Linda." Her subsequent performances have been as follows:

1845—Florence, in "Buondelmonte," (composed for her) and in "Giovanna d'Arco." At Sienna in "Ernani" and "Linda." At Palermo in "Lucia," "Il Barbiere," "I Lombardi," "l'Orfana Guelfa," (composed for her by Coppola) and the "Fidanzata Corsa."

1846—Leghorn, for the third time, in "Buondelmonte" and "Giovanna d'Arco." At Genoa, in "Luisa Strozze," "Foscari" and "Attila."

1847—At Modena, in the "Lombardi" and "Beatrice di Tenda." At Brescia in the "Lombardi" and "Attila." At Cremona in "Gemma di Vergy." At Trieste in "Nabuco" and "Orazii Curiazii."

1848—At Genoa (second time) in "Orazii e Curiazii," in "Tancredi," (composed for her and not Rossini's) and in "La Marechale d'Ancre." At Naples in the Grand Theatre of San Carlo, in "Nabuco" and the "Lombardi." At Turin in "Atilla" and "Il Gladiatore," the latter composed for Mme. Gazzaniga by Bona.

1849—At Naples (second time in the San Carlo) in "Saffo" and "Luisa Miller," the latter opera being dedicated to her by Verdi.

1850.—At Trieste, (second time) in "Luisa Miller," in "Stifellio," (composed for her by Verdi) in "Orazii e Curiazii," (adapted to her voice by Mercadante); at Milan in the Grand Theatre of La Scala, in the "Lombardi," "Lucrezia," and "I Martiri."

1851.—At Padua, in "I Martiri," "I Masnadieri," "Liusa Miller" and "Rigoletto;" at Milan, (for the second time within a year, on occasion of the festivities in honor of the Emperor's coming of age); at Parma, in "I Martiri," in "Norma," (which she repeated nineteen times,) in "Tancredi" and in "Luigi V," written for her by her master Mazzucato.

1852.—At Modena, in "Norma," (sixteen times,) and in "Luigi V;" at Bologna, in "Norma," (twenty-one times,) and in "I Martiri; at Milan, (third time at La Scala,) in "I Martiri," in "Luigi V," and in "The Cid," (composed for her by Pacini.)

1853—at Bergamo (second time) in "Il Trovatore" and various other operas not recorded. At Padua (second time) in "Orazii e Curiazii," in "Rigoletto," and in "Gaston de Foix" (written for her by Galli. At Madrid, in "Norma," "Lucrezia," "Trovatore," "Ernani," "Luisa Miller," "Robert le Diable" and "Il Degonda."

1854—At Valencia, in "Trovatore," "Linda," "Luisa Miller," "Ernani" and "Lucrezia." At Madrid (second time) the same operas as in the first year, together with "I Martiri" and "Saffo."

1855—At Barcelona, in "Luisa Miller," and "Trovatore." At Saragossa, in "Luisa Miller," "Trovatore" and "Norma." At Valencia, in "La Traviata" and the same operas as in 1854. At Turin (second time) in "I Vespri Siciliani," "Trovatore" and "La Vergine di Kent" (composed for her).

1856—At Ancona, in "I Vespri Siciliani," "Trovatore" and "Lucrezia." At Udine, in "Luisa Miller," "Trovatore" and "I Martiri." At Trieste, in "La Traviata" (performed twenty-six times in one engagement of thirty-eight nights) in "I Vespri Siciliani" and others.

1857.—At Philadelphia in "Trovatore," "Lucrezia," "Linda," "L'Elisir," "La Traviata," "Norma," "Luisa Miller," and "Ernani." At New York and Boston, and at Philadelphia (second time) the same operas.

1858.—At Havana in "Lucrezia," "Linda," "Trovatore," "Norma," "La Traviata," and "La Favorita."

Whoever looks over the above will be satisfied of the industry and versatility of Madame Gazzaniga. But better to show the amount of her study, we give a list of all the operas mentioned above, in the order of her first appearance in each of them. They are as follows:

Linda,
Don Pasquale,
Ernani,
L'Elisir,
Il Bravo,
Nabuco,
Bonifacio,
Buondelmonte,
Giovanna d'Arco,
Il Barbiere,
Lombardi,
L'Orfana Guelfa,
Fidanzata Corsa,
Luisa Strozze,
Foscari,
Attila,
Beatrice di Tenda,
Gemma di Vergy,
Orazii e Curiazii,
Tancredi,
Marechale d'Ancre,
Il Gladiatore,
Saffo,
Luisa Miller,
Stifellio,
Lucrezia,
I Martiri,
Rigoletto,
Norma,
Luigi V.
Il Cid,
Trovatore,
Gaston de Foix,
Robert le Diable,
Il Degonda,
La Traviata,
Vespri Siciliani,
La Vergine di Kent,
La Favorita.

The above list contains thirty-nine operas. It comprises all the works of Verdi, seven of Donizetti, two of Bellini, several of Mercadante and Pacini, one of Meyerbeer, and some the composers of which are unknown in this country. There is one of Rossini, too—"Il Barbiere"—though as it does not appear to have been repeated, it is probable that Mme. Gazzaniga was not very successful in it. We hear that she is now studying "William Tell," which is to be produced as soon as it can be prepared by the present company. This will be her second essay in Rossini's operas, but the style is so different from "Il Barbiere," that she can have no difficulty in it.

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sion at all times, $30. de7 y

AMERICAN ACADEMY OF MUSIC.—The PROMENADE CONCERT and GRAND BALL, in aid of the Fund for Insuring the Building and Properties, to improve the Mechanism of the Stage, and to furnish additional Scenery, &c., will take place in the Building, on BROAD and LOCUST Streets,

On THURSDAY EVENING,
The SEVENTEENTH of FEBRUARY next,

Under the patronage of the following LADIES, who have consented to aid the undertaking by their presence and influence:—

Mrs. J. Rhea Barton,
" A. E. Borie,
" G. H. Boker,
" J. B. Budd,
" Thomas Cadwalader,
" G. Chapman,
" John Cadwalader,
" T. Cochran,
" Heyward Drayton
" John Dallett,
" Henry Drayton,
" J. F. Frazer,
" J. R. Fry,
" C. D. Gilpin,
" B. Guillou,
" S. W. Gross,
" Oliver Hopkinson,
" James Hazlehurst
" W. B. Hart,
" R. M. Hooper,
Mrs. L. R. Koecker,
" J. L. Lafitte,
" F. Lennig,
" W. D. Lewis,
" John Lindsay,
" Edwin Mitchell,
" Harry McCall,
" Isaac Norris,
" Francis Peters,
" F. S. Pepper,
" James W. Paul,
" J. P. Steiner,
" A. Murray Stewart,
" Nathan Taylor,
" Henry Tilge,
" George Trott,
" Fairman Rogers,
" William S. Vaux,
" I. S. Waterman,
" William Whitney.

The following gentlemen have also consented ot give their assistance:—

J. Rhea Barton,
A. F. Borie,
H. D. Gilpin,
Thomas Cadwalader,
Isaac Norris,
John Cadwalader,
Oliver Hopkinson,
Harry McCall,
Francis Peters,
L. J. Levy,
J. L. Lafitte,
F. Lennig,
N. Taylor,
H. Tilge,
George Trott,
Fairman Rogers,
Isaac S. Waterman,
Evans Rogers,
George S. Pepper,
Francis McMurtrie,
Frederick Graff,
W. C. Ludwig,
John Lindsay,
G. Schweitering,
H. L. Elder,
J. E. Caldwell,
R. F. Gratz,
P. B. De Silver,
A. Benson, jr.,
J. F. Tobias,
John Castner,
A. Fitler,
E. W. Bailey,
John H. Brown,
J. L. Moss,
F. F. Wolgamuth,
Frank Carpenter,
John Cadwalader,
Heyward Drayton,
W. D. Lewis,
S. W. Gross,
Henry Drayton,
J. B. Budd,
G. H. Boker,
Jas. W. Paul,
C. Guillou,
V. de Amarelli,
J. R. Fry,
J. F. Frazer,
F. S. Pepper,
Wm. Whitney,
W. S. Vaux,
W. B. Haseltine,
R. M. Hooper,
W. B. Hart,
S. O. Fuguet,
F. J. Dreer,
S. Branson,
J. C. Harris,
W. S. Stewart,
Francis Lewis,
G. F. Presbury,
Henry Budd,
G. J. Gross,
E. R. Hutchinson,
James Traquair,
L. D. Baugh,
John W. Grigg,
James B. Caldwell,
E. P. Steel,
C. F. Lennig, jr.,
G. J. Weaver,
T. B. Peterson,
George Senat,
L. R. Koecker,
James Hazlehurst,
John Dallett,
A. Murray Stewart,
Edwin Mitchell,
Crawford Arnold,
G. W. Page,
B. F. Huddy,
G. H. Horstman,
J. W. Forney,
Wm. S. Smith,
Robert Smith,
Thomas Sparks,
John Notman,
J. H. Orne,
A. H. Denckla,
James Allderdice,
Traviz Cochran
Meyer Sternberger,

The stage will be arranged in Ball drapery, a beautiful scene presented in the back ground, with distribution of Statuary and Shrubbery.

Doors open at 8 o'clock. Music commencing at 8¼, and Dancing at 9½. No secured seats. Gentlemen not admitted with canes or overcoats, nor Ladies with bonnets, on the Ball Room floor, during the dancing.

Cards of admission, $3 each, for Gentlemen; $2 each for Ladies, which can be obtained of the gentlemen above named, as also of a committee at the Academy, during the day and evening of the Seventeenth of February.

George S. Pepper,
John B. Budd,
Fairman Rogers,
Samuel Branson,
James Traquair,
Frederick Graff,
Nathan Taylor.
Committee of Directors.
jan 21 28 feb 4 11 4t

MESSINA ORANGES and LEMONS.—1000 boxes Messina Oranges and Lemons, landing

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AMERICAN ACADEMY OF MUSIC.

The GRAND BALL and Promenade Concert will take place in the Building, on

THURSDAY EVENING, February 17.

Drors open at 8 o'clock—Music commencing at 8½ and Dancing at 9½. Floor Manager, M. HLASKO. Carriages set down on Broad street, heading South—take up, heading North. Doors on LOCUST Street, open for exit only, heading East. The Cloak rooms will be arranged to prevent loss or confusion. Tickets of admission $3 each, for Gentlemen; $2 each for Ladies. Children under fourteen years, admitted on Ladies' tickets, at $2 each. All tickets to be delivered at the doors. They can be obtained of the Gentlemen whose names have been heretofore published, who will act as Managers of the Ball; also to be had, at

BECK & LAWTON'S, No. 632 CHESNUT Street.
LEE & WALKER'S, " 722 " "
G. ANDREE, " 1104 " "

Also, at the Secretary's Office, 108 South FOURTH Street, the Girard, St. Lawrence, and La Pierre Hotels, and at the Academy Office, on the day and evening of the 17th of FEBRUARY.

GEORGE S. PEPPER,
JOHN B. BUDD;
FAIRMAN ROGERS,
SAMUEL BRANSON,
JAMES TRAQUAIR,
FREDERICK GRAFF,
NATHAN TAYLOR,
Committee of Directors.
fe10 14&17 1t

THE average daily consumption of Cochituate water in Boston last year was 14,769,167 gallons; an increase over the previous year of 1,204,107 gallons. The least average in any one month was 12,636,000 gallons in the month of April; and the largest average was in the month of February, when it reached 16,927,000 gallons. The income from water rates last year was $553,744.88; a gain over the previous year of $31,613.95 The estimated income from water rates for the year 1869 is $600,000.

SUNDAY TRANSCRIPT.

PHILADELPHIA, MARCH 29, 1868.

The Wholesale Poison Question.

A committee of the manufacturers doing business along the line of the Schuylkill River, have addressed a petition to the Legislature against the bill which forbids the use of that river for sewage purposes from Norristown dam to Fairmount dam. The document is, in many respects, an extraordinary one, and the arguments advanced in behalf of the manufacturers will not bear the application of common-sense and common justice. The most cogent reason offered by the petitioners why they should still be permitted to use the river as a sewer, is, that the roughly estimated number of thirty thousand persons are dependent upon the offending factories for their support, and that Philadelphia has thirty-six million dollars capital invested in these establishments. We fully admit, with the petitioners, the vast importance of this large interest, not only to the welfare of this great number of people, but to the industrial interests and the wealth of the city. But even allowing for a moment that the enforcement of the law would have the effect of ruining this interest, and of throwing all of these people out of immediate employment, no unprejudiced man would hesitate to say that it would be better to entail this disaster upon these communities, and to rob the city of the advantages gained by the investment of this capital, than to place in jeopardy the health of the million persons who form the population of Philadelphia, by poisoning the source of their water supply.

This manufacturing interest is not, as the petitioners assert, "as necessary to the growth and prosperity of the city as the supply of pure water is to the health of the inhabitants." The first is a matter of dollars and cents; the other of life and death. If the manufacturers are driven from this locality, they will find other places in the vicinity of this city where they will continue their operations. But there is no necessity for either of these disastrous consequences. We long ago proposed to obviate the difficulty by compelling the manufacturers to construct a system of sewage with which to drain the poisonous filth which flows from their establishments. This, the petitioners assert, cannot be done; they say that "no artificial drainage can be efficiently substituted for the natural bed of the Schuylkill River," and yet in the very same article they propose that the great city of Philadelphia shall erect a series of iron pipes from Flat Rock Dam to Fairmount and procure water by this means. If the first proposition is not feasible, this one is manifestly absurd. If less than one hundred factories find it impossible to construct drains great enough to carry off their own refuse, how utterly impossible will it be for the city to carry a sufficient supply of water through a single iron pipe, or, indeed, through a dozen? The proposal of the petitioners has not the merit of common sense or common honesty.

see far Right
for End →

Engineer Graff, of the Water Department, has not received justice from the press of the city. He proved his ability at a very critical period in the history of the city, and it is but right that he should have the poor reward of "well done, good and faithful servant." In the midst of our difficulties, with admirable address and judgment, he procured from New York a powerful floating steam-pump to supply the reservoir at Fairmount with water, taken from the Schuylkill *below* the dam. He by this means pumps up some five million gallons per day, which, with the assistance of the wheels, furnishes a fair supply of water to the people of the city. This floating steam-pump was built in Philadelphia and sold to New York. "Honor to whom honor is due."

THE WATER SUPPLY—CONDITION OF THE WORKS.—The supply of water to the citizens continues to be limited, and the difficulty will not be fully overcome before the commencement of next week. This state of things is attributable altogether to the damage done to the works by the recent heavy rain storms, and the high tides in the Schuylkill which immediately followed, preventing the running of the pumps at Fairmount. To fully understand the difficulty which followed the storm, it is necessary for our readers to know the exact capacity of the works which supply the city. The works can pump each day as follows:

Fairmount............24,000,000 gallons.
Schuylkill or Spring Garden
Works............8,000,000 "
Delaware Works............3,000,000 "
Twenty-fourth Ward works, 1,000,000 "
Total............36,000,000 "

Now, when it is considered that this amount of water is less by 7,000,000 gallons than is used at times in one day, it can readily be understood that any disarrangement of the works will so reduce the amount usually stored as to make the most economical use of the water necessary. The storage capacity of the works is as follows:

Fairmount, 4 reservoirs....$27,000,000 gallons.
Corinthian ave., 1 " .... 40,000,000 "
Spring Garden, 2 " .... 9,000,000 "
Delaware, 2 " .... 9,000,000 "
Total............85,000,000

which is less than three days' mean average supply, or two days of the greatest demand, which reached in one day last year to 43,250,000 gallons. This demand then continued for three days, reducing the reservoirs about five feet.

On last Thursday two weeks our city was visited by the first heavy rain storm. It being local in its character, the freshet in the Schuylkill was not very great, but the washing away of the Reading Railroad embankment, near the Spring Garden Water Works, nearly filled the forebay of the works with sand, thus stopping for several days the supply of water from that source. Just as these works were again ready to commence operations the storm of yesterday week came on. This being more general in its character, a heavy freshet occurred, the same bank was again washed away, and the forebay at the Spring Garden Works filled to the top with sand and gravel. It was found on measuring this deposit that it amounted to 3500 cubic yards. A large number of men have been employed in removing the gravel since last Friday, but there is still three or four feet of it remaining. By cutting a channel through it the Chief Engineer has been enabled to start the Cornish engine, but cannot run it regularly. The reservoir connected with these works is about 16 feet deep, and yesterday there was but three feet of water in it.

The damage to the Spring Garden works would not, however, have affected much the supply of water had it not been for the unusual and almost unprecedented high tides in the Schuylkill, which flooded the wheel houses to the depth of six and eight feet, thereby stopping all the pumps, upon which the supply depended. This stoppage continued almost twenty-four hours, while the water stored was being drawn out. As soon as this difficulty had been overcome, and the wheels started, a break occurred to the lining of the Corinthian avenue basin, which prevented any more water from being pumped into it.

This break was fortunately discovered in time to prevent, perhaps, the entire destruction of the reservoir; and by having men employed night and day, the damage is nearly repaired. To prevent any similar disaster, a frame-work, 13 by 48 feet, filled with cement and bricks, has been constructed and placed inside the reservoir, in a position to receive the water as it falls from the 48-inch main, the mouth of which rests upon the top of the reservoir. A retaining wall of heavy stone is also being placed on the outside, where a large portion of the embankment had been washed away.

The Corinthian avenue basin holds water to the depth of 25 feet, but in consequence of the difficulties which we have enumerated, the quantity has been reduced to less than seven feet. By to-morrow all the repairs will be completed, when the work of again filling the reservoirs will be commenced.

It was in consequence of this state of things that notices were served on the manufacturers of the city to stop using the water until Monday next, and also cautioning our citizens generally to cease from washing pavements or wasting the water in any way. The notice was ordered to be sent to all establishments, but, by some oversight, a number of parties did not receive any word.

TWELVE O'CLOCK AT NEW YORK.—Appleton's Railway and Steam Navigation Guide, of June, has on page 27, a "Time Indicator," which shows the difference of time between various cities in the United States. When it is twelve o'clock in New York, it is—

At Boston. Mass.	12 minutes past 12
At Portland, Maine,	16 minutes past 12
At Philadelphia, Pa.,	55 minutes past 11
At Baltimore, Md.,	50 minutes past 11
At Richmond, Va.,	46 minutes past 11
At Buffalo, N. Y.,	40 minutes past 11
At Charleston, S. C.,	36 minutes past 11
At Pittsburgh, Pa.,	35 minutes past 11
At Wheeling, Va.,	31 minntes past 11
At Cleveland, Ohio,	30 minutes past 11
At Augusta, Ga.,	30 minutes p st 11
At Detroit, Mich.,	24 minutes past 11
At Columbus, Ohio,	24 minutes past 11
At Cincinnati, Ohio,	20 minutes past 11
At Indianapolis, Ind.,	14 minutes past 11
At Louisville, Ky.,	14 minutes past 11
At Chicago, Ill.,	6 minutes past 11
At New Orleans, La.,	55 minutes past 10
At St. Louis, Mo.,	55 minutes past 10
At St. Paul, Minnesota,	44 minutes past 10

SOCIETY OF PRACTICAL ENGINEERING.

At the meeting of this Society held on Tuesday evening at the Cooper Institute, the President, Mr. James A. Whitney, introduced Mr. Lawrence Holms of Paterson who read an exhaustive paper on "The Filtration of Water for Industrial, Commercial, and Domestic Purposes."

It was claimed by Mr. Holms, that not only are we behind the ancients in a sanitary point of view, but in actual cleanliness. When Rome did not exceed 1,000,000 of inhabitants, it had 20 aqueducts, supplying 50,000,000 cubic feet of water per day. This is equal to 312 gallons for every person. The average quantity now supplied in England, is 20 gallons. In speaking of London, the lecturer remarked that the sewage water is emptied into the Thames, and a large proportion of it pumped back again for the use of the inhabitants. He referred to Chicago, where a few years ago sewage of a most disgusting character supplied the strong stomached inhabitants with their common beverage. The city of Boston drank of the Cochituate, which she dared not smell of. New-York had her animalculæ, skipping about in her Croton waters, as well as much vegetable life, and a large quantity of inorganic matter, besides dead eels and fish in the Croton pipes. Philadelphia and Albany were similarly situated. Mr. Holms then asserted that although it was proven years ago that filtration, properly conducted, would remedy these evils, yet there is no public filter in the United States.

The lecturer explained by diagrams the construction of the several filters used in France, England, and Scotland, giving their costs, products, and expense of running. It appeared that in London, Glasgow, and elsewhere, one square yard of filtering medium purified about 600 gallons of water every 24 hours. The cost is about 30 shillings sterling per square yard.

A filter like those used in Europe would cover about 24 acres, and would require to be located near the distributing reservoir. The cost, independent of the land would be some $2,000,000. An American filter, the invention of Mr. Holms, was brought to the notice of the Society, as also was some of the medium used. The medium was a kind of elastic porous material, prepared chemically in such a way as to enable it to resist the decaying influences of water, and also to give it a most marvelous degree of porosity. The expense of providing such a filter for the City of New-York would not exceed $500,000, and pure water would thereby be supplied at the cost of one cent for every 3.312 gallons. The space occupied need not exceed more than cubic feet. The subject was well illustrated by means diagrams, and the statements proven by figures.

The lecturer concluded by remarking that the death te of our large cities is largely augmented by the putrid atters and animalculæ which find their way into and are nerated by the water doled out to the people.

r. Benson of Yates City, Ill., exhibited the model of a feathering paddlewheel for steamboats, which, it is med, does not cost more than half the amount and sesses much more strength than the ordinary feather- paddlewheel. The feathering is done by guidepins ed on the side of the boat.

MESSRS. EDITORS:—THE FOL- lowing letter explains itself. It was sent to Mr. Graeff. He returned it to us without comment. We deem it proper that the public should know the facts therein stated, and therefore desire its publication:

BUSHONG & BROTHER,
(Late of the firm of P. Bushong & Sons,)
Bankers, Stock and Exchange Brokers.
READING, Pa., April 22d, 1870.

Fred. Graeff, Esq:

Dear Sir—Messrs. Mellert & Kinsey, manufacturers of this city, by sealed proposals filed the 19th of this month, offered to furnish all the cast iron water mains advertised for by you as Chief Engineer of the Water Department of Philadelphia, at the rate of two and one-half cents per pound. This proposal was made in good faith, and in conformance with the regulations of your department. Mr. H. W. Gray, of your city, and one of our firm accompanied Messrs. Mellert & Kinsey to your office and received from you the blanks for the proposals, which were filled up in accordance with your instructions and bond filed as required. By to-day's *Public Ledger* we see the contract was awarded to other parties at one half cent per pound more than the bid of Messrs. Mellert & Kinsey; and when Mr. Plumly called the attention of the Councils to the fact that there was a lower bid, "it was ruled out for informality."

We are the owners of considerable real estate in Philadelphia, and therefore heavy tax-payers. The city loses some sixty thousand dollars by this rascality in awarding the contract. Messrs. Mellert & Kinsey are in every way responsible and offered any security required. We suppose the alleged informality consisted in not subsidizing certain persons. Had Messrs. Mellert & Kinsey been members of a ring, or adepts in the art of public plunder, their bid might have received more consideration and the tax payers saved another heavy loss. It is about time this kind of robbery should cease; Philadelphia has had more than enough of it. The facts of this case happened to be within our personal knowledge, and we feel in duty bound to spare no pains or expense to have this fraud on the tax-payers investigated and exposed. We write to you as the head of the Department, hoping that you will help us ventilate this last public swindle, as you are in duty bound to do. Yours, truly,

BUSHONG & BRO.

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SECOND WARD.

A table by Mr. Haywood, engineer to the City of London Board of Sewers, shows that the total traffic along certain crowded places during one day (twelve hours) of the summer of last year, amounted to 154,056 vehicles of every kind:—By Cornhill (Royal Exchange), 5,256; Temple Bar (a great obstruction), 9,883; Ludgate hill (Pilgrim street), 10,626; London bridge, 18,179. The average per hour of the whole traffic was 12,838; the maximum was 15,204 at twelve noon, and the minimum 8,454 at two A. M. One of the first measures of the reformed corporation of London will be to increase the street facilities, especially by the purchase of the Southwark iron bridge, which may be obtained for £300,000.

The winds of Autumn howled mournfully around Farmer Blakely's dwelling. They tossed the reddened and withered leaves in heaps, and, catching some loose straws in their path, whirled them far and wide through the air. Even the hens and turkeys standing before the blast were caught by it, and went scudding before it like ships in a storm. It made me comfortable; because I contrasted its rudeness and generally boisterous conduct with the snug comfort and fair prospect that the surroundings of the farm gave token of for the coming winter. Cords of wood piled in the yard seasoning against the future evenings'

FOREIGN COINS.—THE CURRENCY OF THE UNITED STATES.—The following table of foreign coins, with their equivalents in U. S. currency, gold valuation, has been prepared at the request of the Controller of the Treasury, November, 1857, for the use of the Government, in computing the salaries of foreign ministers and others. It is generally supposed that the value of foreign coins is fixed by law, but such is not the case. The coins of foresgn countries are not a legal tender in the payment of debts, though they are taken at their valuation at the mint. In view of these facts, the table annexed is especially important.

			d. c. m.
Austria	Specie dollar	Silver	1 02 5
Do.	Florin	Do.	51 2
Brazil	Milreis	Do.	1 02 5
Belgium*	Franc	Gold	19 2
Do	Do.	Silver	19 6
Bremen	Rix dollar	Money of acc	75 0
Buenos Ayres	Doubloon	Gold	15 50 0
Cent, America	Dollar	Silver	1 00 0
Chili	Do, old	Do.	1 06 0
Do.	Do. new	Do.	98 2
China	Tael	Money of acct	1 48 0
Denmark	Specie daler	Silver	1 10 7
Do.	Rigs-bk daler	Do.	55 3
England	Pound sterling	Gold	4 84 8
France*	Franc	Do.	19 2
Do.	20 franc piece	Gold, being	3 84 0
Do.	Franc	Silver	19 6
Germany, N.	Thaler	Do.	72 0
Do. S.	Florin	Do.	41 7
Hamburg	Marc-banco	Money of acct	37 0
India	Rupee	Silver	45 6
Do.	Star pagoda	Gold	1 81 0
Lombardy	Lira	Silver	17 1
Mexico	Dollar	Do	1 06 2
Naples	Scudo	Do.	1 00 5
Do.	Carlin	Do.	07 6
Do.	Onzia (ounce)	Gold	2 48 0
Do.	Ducat	Money of acct	83 0
Netherlands	Guilder	Silver	41 4
Norway	Specie daler	Do.	1 10 7
Peru	Dollar, new	Do.	95 0
Do.	Do., old	Do.	1 06 0
Portugal	Milreis	Do.	1 18 9
Prussia	Thaler	Do.	72 0
Rome	Scudo	Do.	1 06 0
Russia	Rouble	Do.	79 4
Sardinia	Franc or lira	Do.	19 6
Spain	Real vellon	Do.	05 0
Do.	New doubloon	Gold	4 96 3
Do.	New Peninsula dollar	Silver (peso of 20 reals)	1 01 5
Sweden	Specie daler	Silver	1 11 4
Turkey	Piastre	Gold or silver	04 4
Tuscany	Florin	Silver	27 7

N. B.—Four of the above, being moneys of account only, are estimated by their legal relation to certain coins.

JAMES ROSS SNOWDEN,
Director of the Mint.

Mint of the United States, Philada., Nov. 12, 1857.

* The actual currency of both these countries is gold and computations are of course made in reference to that medium. Like the United States, they have the double standard, but silver only circulates for small change, and its value cannot be regarded in computing pecuniary obligations.

(Part 2) - "The Wholesale Poison Question"

The real position is just this: A few men plant themselves by the side of a stream, the water of which supports the life of one million human beings. Deliberately, they empty into that stream foul matter which, in large or small quantities, is taken into the stomachs of this great multitude of people. The manufacturers know this must be the case when they make the river their common sewer. When the representatives of the people undertake to legislate in their behalf, these gentlemanly Borgias come forward and say, "you must neither break up our business, nor put us to the expense of building sewers; if you do not wish to drink our poison, you must expend a few millions in tapping the river higher up, and, as the factories increase, you must lengthen your pipes, and take them further up the river." At this rate we will have to build waterworks at Pottsville in a few years.

The fact is, that the people have the best right to the river; because they are in the majority; because they erected their works before the factories were thought of; and because the Almighty placed the stream there as a source of water supply, and not as a sewer. Their rights must be protected before any individual interests, and if any expense is to be incurred, it must fall upon the late comers, who planted themselves there in full knowledge of the fact that they were using the river for improper purposes. We sincerely hope that this foolish and selfish petition will not have any effect upon the Legislature. That body owes it to itself to protect the people as a mass, and to let manufacturers look out for themselves when their interests militate against those of the whole community.

U. S. Mechanics' Own.

OFFICE 120 EXCHANGE STREET.

Philadelphia, Saturday, Sept. 24, 1859.

CHAS. H. DEMARAY,
No. 115 and 117 Nassau Street, New York,
Rooms 14 and 15.]
GENERAL AGENT FOR THE U. S. MECHANICS' OWN, IN THE CITY OF NEW YORK.

The above firm is hereby authorized to receive advertisements, subscriptions, &c., on our account.

FAGAN & CO.,
GENERAL AGENTS FOR PITTSBURGH.

THE WATER DEPARTMENT AND ITS ENGINEER.

The public mind is familiar with the dispute which has arisen between Mr. Birkenbine, the Chief Engineer of the Water Department, on the one hand, and Messrs. Barry and Garrett, his Assistants, backed by a resolution of Councils, on the other. The merits of the matter in dispute lie in a nutshell, and are all against Mr. Birkenbine. For some private grief, or personal dread of Mr. Barry, the Chief Engineer discharged both him and the other Assistant, without assigning any cause for his action. The dismissed Assistants, feeling that their reputations were at stake, petitioned Councils for a hearing of their case, and asked that Mr. Birkenbine be requested to set forth any charges he might have against them, in order that they (the dismissed) could enter upon their self-vindication. Councils made this requisition upon the Chief Engineer, and he, after much delay, presented his specifications; all of which, upon an examination by the committee, proved to be utterly groundless. Councils subsequently passed a resolution requesting Mr. Birkenbine to re-appoint the officers removed; which he declined to do in the following language, read at the meeting of Councils held on the 16th instant:

I would say that it would afford me great pleasure to oblige so many of your honorable body, by reinstating the two "enginemen" discharged from Fairmount Works, who have drawn so largely upon your sympathies, could it be done without prejudicing the interests of the department you have entrusted to my care, and without injustice to those now filling the positions, who are much better qualified, and willing to perform the duties assigned them. But as they were discharged for what appeared to me good and sufficient reasons, I cannot do so, without being recreant to my duty and the interest of the city. I must, therefore, most respectfully decline reinstating them. While every appointment made by me in the department has been upon the recommendation of members of Council, with but two exceptions, I cannot consider such recommendations as an excuse for any dereliction of duty, no matter how influential the parties recommending them may be. It is due to those filling responsible positions under me in the department, to state that those two are the only removals it has been necessary to make.

Here we have the case stated, so far as the public view of the subject is concerned; but the private motives which influenced Mr. Birkenbine in his action, he would retain in his own breast. We shall draw them forth, and exhibit them before the eyes of the community, that even the parblind may behold the selfishness and cowardice of his conduct, and the untruthfulness of his allegations. The assumption that he may disregard at pleasure the requirements of a resolution of Councils, we hold to be both insolent to that body, and dangerous to the interests of the city. Councils may not direct him who he shall appoint, but they can command him who he shall not dismiss. The public interest requires this power—otherwise some very inferior head of a department, like Mr. Birkenbine himself, might dismiss every person of skill about the water works, with a view to prevent aspirants for his position. But let us progress, step by step, in this matter, in order to a full elucidation of Mr. Birkenbine's motives in dismissing his two Assistants.

Some years since, the people of West Philadelphia felt the necessity of having a supply of water from their own side of the Schuylkill river, and contracted with certain parties for the construction of works commensurate with their daily wants. A location was selected which no one but an ignorant or demented engineer would ever have thought of adopting, and a stand-pipe, which looked like the blast chimney of some foundry, was erected on a hill for the distribution of the water, long in advance of the construction of the basin for its reception. There it remained for many months or years, a beacon of the Engineer's folly, and somebody's speculation. We recollect our visit to it, probably eight years since, and a portion of the conversation we then had with the Engineer. He was very communicative, and extolled this child of his fancy in no measured language. Having some knowledge of hydrostatics, we interrogated him upon the subject of the capacity of his bantling, the extent of his reservoir, the power of his engine, the length of pipe to be supplied, the heights to overcome, &c., and soon discovered that if left to generalities, he was as fluent as a magpie; but when brought to specialties, he was as shallow as a flounder. Our observation induced us to whisper in the ear of a learned judge, who stood by—this man is an adventurous dunce, and time will disclose the fact. The miserable abortion is standing to this day a monument of the folly and ignorance of its contriver. We have given this reminiscence by way of episode, that we may begin at the beginning.

If we recollect aright, both Mr. Barry and the other Assistant, were appointed engineers by Mr. Birkenbine shortly after his election as Chief. They received their appointments on account of their superior qualifications, as it was alleged at the time, and no one aided to a greater extent in giving the public this opinion, than Mr. Birkenbine himself. Removals were made to give them place, and as our citizens are very sensitive upon the subject of a full supply of water, as well as gas, it was deemed necessary to give them an assurance of the competency of the two incumbents. That they possessed all the qualifications necessary for a faithful discharge of their duties, is manifest from their long continuance in office under Mr. Birkenbine, and his anxiety to test an invention of Assistant Barry, of great importance to the works. The invention was tested, and worked beyond their highest expectations. Herein lies the germ of Mr. Birkenbine's displeasure, or rather dread of Mr. Barry's superior ability. It was an after thought, engendered by fear and envy. And this becomes apparent in the fact that, notwithstanding Mr. Birkenbine's approval of the invention, and his frequent promises to bring it before the attention of the Watering Committee of Councils, in order to have it applied to the engines at Fairmount; he never did so, although he repeatedly assured Assistant Barry that he had mentioned it to several members of the committee. After much procrastination, Mr. Barry thought he would himself speak to members of the committee on the subject, placing full reliance in the truth of Mr. Birkenbine's assurances that the invention had repeatedly been presented to their attention. Had he not supposed that his Chief had spoken falsely, as subsequently appeared. Here was a double offence—that of possessing superior merit in contriving the invention, and innocently convicting him of falsehood. The two passions of envy and revenge seem to have inspired Mr. Birkenbine with a settled determination to injure Assistant Barry; but in the very craft of his malice, he was induced to couple another Assistant (Mr. Garrett) with him, in order to hide the baseness of his design. It is ever thus with men of weak minds and bad hearts. They can never rise to the dignity of manhood, nor can they enjoy peace so long as they discover others more meritorious than themselves, who might probably supplant them in their positions.

We know nothing of Mr. Birkenbine's general character. It may be good, or bad, or indifferent, according to the circumstances by which he is surrounded. In his deficiency as an engineer, we are thoroughly convinced. As to his morality as a man, judged by the standard we have here presented, or by any other correct ethical test, there can be but one opinion. The true motives of his actions, like the pipes of an organ, he hopes to have concealed; but would amuse the public with the gilded and hollow pretext of the city's interest. This he pompously places in the front for show, and in the meanness of his anger, calls his Assistants "enginemen." This attempt at depreciating their positions, shows the rancor of his animosity. We have not the ordinance establishing the Water Department before us; but we think they are called Assistant Engineers by it. Such they are, and such they have been, called both by him and a far superior engineer, Mr. Graff. Has Mr. Birkenbine ever considered that malicious envy is among the lowest of human passions, and that if surrounded on all sides by the brightness of another man's genius, like the scorpion confined within a circle of fire, it will sting itself to death? We doubt much whether his mind has yet reached that exalted condition which enables a man to disseminate between envy and honest emulation. He has certainly overreached himself in his attempt to destroy an honest man and skillful engineer, by having public attention drawn to the difference in their capacities. The one, as a subordinate, invented something that would protect the machinery, and give it accelerated force and power; and the Chief at first viewed it with satisfaction. But an after thought loaded his mind with apprehension, and he at once discharged the inventor from the city's service, and took down his invention. It appears that, taking a hint from Mr. Barry's apparatus, he turned inventor himself; but his crude mind was so much at fault in physics, as in hydrostatics, and of course his machine was a failure. Our only wonder is, that he did not continue Mr. Barry's invention, and claim it as his own. He could not descend to a greater depth of meanness than he had already reached, and a brazen impudence might have carried the fraud through for him. Americus Vespuccius robbed Columbus of the merit of his discovery—why could not the Chief Engineer rob his Assistant of the merit belonging to him for his discovery? Knavery is so strongly allied to crime, that many believe them to be one, and fail to draw a distinction. Will Councils submit to the recent insult?

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and Communism sink forever into a dishonored memory.

Inq Sch6

THE JOB FINISHED.

By a vote of eighteen to eight Select Council, yesterday, passed, over the Mayor's veto, the Water Loan bill. From the unseemly haste characterizing the calling of the meeting, it was pretty evident on Monday that the job was already determined, and that the final affirmative vote was a foregone conclusion. But, however improper was the haste shown in calling this special meeting of Select Council, infinitely more reprehensible was the hurry shown to pass the Water Loan bill after a quorum had been secured.

No debate was permitted; the protests of the honest few showing that proper estimates had not been furnished, that no tax-payer knew how or where the enormous sum demanded was to be spent, were entirely disregarded, and the scheme was hustled through the Chamber pretty much as a burglar hustles his plunder out of a window. The truth is, the whole job had been arranged before Councils met, and the members having personal interests to advance did so in shameless effrontery of the public and in disregard of the people's rights and parliamentary usage.

Those who yesterday voted to create a monstrous loan for the tax-payers to discharge, without first knowing how the loan was to be spent, for what exact purposes or by whom, are as follows:—Messrs. ALEXANDER, BUMM, BURNELL, FAREIRA, GATES, HANNA, HARKNESS, HODGDON, JONES, LITTLETON, MILLER, PARK, SHALLCROSS, SHERMER, SMITH, GEORGE A., SMITH, THOMAS J., SPENCE, CATTELL, president. Some of these men are candidates for re-election.

FAIRMOUNT.

The Present Prospect—No Increase in the Supply of Water—The Effects of the Late Rains Not Noticeable—Philadelphia Superseded by New York—Chief Engineer Graff Sends to New York for Assistance.

Yesterday being bright and fair, we wended our way toward Fairmount Park. In our wending we brought into requisition a vehicle used by many of our residents at various times, namely, a passenger railway car. Alighting at the south gate of the old park we immediately proceeded to the wheel-houses, where we found a number of the operatives standing around at various points chatting and indulging in idle gossip. On questioning one of them we received the reply that the wheels had stopped at half past four o'clock, and that they had nothing to occupy their time. After taking a glance at the Schuylkill (we were about to say *noble*, but judgment forbids) we proceeded to the park proper, or, in other words, the new Park. The grounds we found well peopled by ladies and children. The drives were but slimly occupied, owing to the absence of a large number of the owners of horseflesh, who were attending the trot at Suffolk Park.

Tramping to the bank of the Schuylkill, we found no perceptible increase in its volume; the stream reminded us more of a country mill pond than a navigable river. It is true a number of canal boats from time to time passed up and down, but beyond this all was as quiet as though humanity did not exist in the neighborhood. Since our last report the various canal boats have been allowed to pass up and down, the chief engineer of the water-works having come to the conclusion that as there was not a sufficient quantity of water to work the wheels, there was no cause to retard their movement, as the small amount of water escaping through the opening and closing of the locks would not prove damageable in effect.

In the centre of the stream we noticed some half a dozen piscatorial amateurs, who were anxiously awaiting a haul of perch, their labors, however, being rewarded only by the "catch" of catfish, sunnies and what school-boys term "minnies."

Returning to the wheel-houses, we roamed forward to the point where the steam fire and wrecking tug John Fuller was anchored, or tied, rather, in the stream. This was about forty feet below the breast of the dam. On the wharf a stationary engine, erected some time ago, was constantly employed in pumping water from the space to be occupied by the new Turbine wheel The. tug lying out some fifteen or twenty feet from the wharf, we toddled down a shaky ladder, crossed a plank, and found ourselves on board the John Fuller. Leading from the vessel to the reservoir was a six-inch iron pipe, through which water was being forced into the main reservoir or basin. Through the kind courtesy of Mr. C. H. Bahler, the Chief Engineer, we ascertained that the Fuller was built in this city some three years ago. It has a length of one hundred feet, and is of ninety tons burthen, with the capacity of throwing eight streams through half-inch nozzles a distance of 230 feet, or forcing a solid stream of twenty-one inches through a single line of hose. The tug was built by Messrs. Neafie & Levy, whose shipyard is at the foot of Marlborough street, and cost $30,000, it being built at the expense of Messrs. J. C. Baxter & Son, ship chandlers, of New York, and is partially under the control of the New York Fire Department. The vessel is used in New York harbor as a wrecking and fire steamer, and has already done good service.

It is so constructed as to be able to pump 8000 gallons a minute. The entire affair was, as we have before stated, constructed by the firm above named, with the exception of ten patent pumps introduced by Chief Engineer Bahler. The tug is capable of throwing 8000 gallons a minute, but Chief Engineer Graff reduced their operations, and they started at 6000 a minute. It was soon found that the hose and pipe used being only six inches was unfit to stand the pressure, and the Chief Engineer was obliged to again reduce the pumping power to about 4000 gallons per minute, single stream. The pumping process started at two o'clock on Tuesday afternoon, and at the present rate the tug is throwing but half its capacity. This is a sad reflection upon Chief Engineer Graff, who, after discarding the service of our own steam fire engines, sought relief in New York, and upon the arrival of the apparatus is obliged to reduce the power on account of his own misjudgment in not providing hose or pipes of sufficient capacity.

Our readers will bear in mind the fact that the Fire Department of this city, through Chief Engineer Downey, placed at the disposal of Mr. Graff any or all of their steam fire engines to be used for pumping water into the basin. This they did, after demonstrating by an actual test that they could force water into the reservoir, all opinions of their opponents to the contrary notwithstanding. All the compensation that they asked for was the cost of the fuel consumed by the engines and the food used by those having charge of the apparatus in service. From the start they met with rebuffs from the parties in charge of the water-works. It was said that the hose would not stand the strain, and even if it did, the engines were not capacitated to throw a stream such a long distance. After it was proven that they could not only throw one stream, but several at the same time, not a single word of praise was uttered by those whom they were assisting; no courtesy was shown them; they were obliged to provide their own fuel, and sustain nature in the best manner possible by eating sandwiches, no such thing as a meal being furnished them.

Finally, after working four days, and throwing at the rate of over 1,152,000 gallons into the reservoir every twenty-four hours, they gave up in disgust, feeling that the parties in charge of our water works looked upon them rather as intruders than aiders. This was Thursday, the 26th ult. From that date until last Tuesday, nothing further was done to increase the water supply by any other means than the use of the "turbines." On the latter named day the tug arrived.

Through this arrangement our tax-payers are compelled to pay to a private New York firm the nice little moiety of $400 for every twenty-four hours of the tug's operations. The contract reads for ten days' service, unless sooner discharged: this will foot up

continued on 153

Bartol

The Worthington Pump.

PHILADELPHIA, June 26, 1868.—*To the Editor of the Bulletin:* I have just read the article in to-day's BULLETIN about the Worthington Pump controversy, and think its tenor and that of articles in some other papers such as to put out of sight the real point at issue.

The question is not whether machinery may or may not be built in New York for Philadelphia. But it is, shall inferior machinery be built in New York at the price of $95,000, when a better article is offered here at $62,000? This is the *whole story*; and the petition sent into Councils yesterday, if it causes them to lose sight of the real question, will do much injury. The city of Brooklyn, some six months ago, wanted pumping machinery, and it sent circulars to machinists here and elsewhere, and finally gave the job to a Brooklyn machine shop. This will make their third set of pumping machinery, *not one* of which is on the Worthington plan. When the Water Works Department want pipes they advertise all the particulars as to size, weight, strength,

continued on 155

Court.

Water Meter.—We examined a water meter at the Watering Department Office a day or two since, which will be, or something equivalent to it, introduced at no distant day. There is, most unquestionably, a very large quantity of water wasted in our City, particularly by gossip-loving biddies, who reveal family secrets while washing pavements. We have seen, during our perambulations, on "bright May morns," after heavy showers of rain on the previous evening, an army of domestics washing the sidewalks, and even the cobbles in front, when such work was rendered entirely unnecessary by the hand of dame Nature herself but a few hours before. There are hundreds of other ways by which the water is wasted, in which, we presume, the department is pretty well posted.

The introduction of a water meter, would enable the City to make an assessment according to the quantity of the aqueous fluid used. Under the present arrangement persons regardless of location or the quantity of water used, pay the same rates for dwellings, baths, and those nonsensical things called wash pavements. The introduction of meters would be beneficial in many points of view. It would prevent a too lavish use of the water, and the expenses for running the different works would be reduced at least one-half. We trust that the effort about to be made by Mr. Birkinbine, the Chief of the Department, and the Watering Committee, whom we understand have the subject under consideration, will be cheerfully seconded by the City Councils.

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unicated.]

ILADELPHIA WATER SUPPLY.

der this head your correspondent "H." contributed several articles, in which, ng to the use of incorrect data and the want of facts, he has been led to erroneous conclusions.

As the subject of supplying the city with water from other sources than those now used has occupied much of my time, and as "H." believes I made a mistake in recommending a gravitation supply from the Perkiomen Creek, I take this opportunity of presenting the following facts, which may be of general interest to your readers, and enable your correspondent to modify his statements, and perhaps change his ideas.

The area drained by the Schuylkill river, above Fairmount dam, is 1,942 square miles (not 3,500), extending into eight counties, thus:

	Square Miles.
Philadelphia county	22
Montgomery county	396
Bucks county	82
Chester county	161
Berks county	841
Schuylkill county	324
Lehigh county	73
Lebanon county	43
Total	1,942

The average annual rain-fall on this area is about forty-five (45) inches, of which about forty (40) per cent. passes into Fairmount dam, making a daily average flow of one billion three hundred and sixty-four million (1,364,000,000) gallons, not fifty-five billion (55,000,000,000) gallons.

More than half the average flow is wasted by freshets; sometimes over ten billions gallons pass over Fairmount Dam in a day, and the ordinary average flow is reduced to six hundred and forty million gallons per day—not four billion four hundred million gallons, as "H." gives it. The minimum flow of the river is frequently below two hundred million gallons. The entire surface drained into the Schuylkill is owned and occupied; numerous dams are constructed, and almost all available mill sites utilized upon the main stream and its tributaries.

The Navigation Company have three impounding reservoirs, with an aggregate capacity of eight hundred million gallons. All these help to equalize the flow of the stream.

Cities, towns, villages, railroads, canals, mines, etc., etc., occupy much of the drainage area, and leave but little which can be employed for the purpose of collecting the storm water in either the river or tributaries. Store reservoirs which will bring the pumping capacity of Fairmount Water Works up to fifty million gallons per day is the limit of what can be practically constructed in addition to those now existing. The average daily amount of water pumped at Fairmount last year was twenty-two and a quarter million gallons. The ultimate capacity of Fairmount may therefore be considered as fifty million gallons (not four hundred and forty million gallons).

The turbine wheels at Fairmount expend thirteen and one-half gallons to raise one into the Fairmount reservoirs, and fifteen gallons to raise one into the Corinthan-avenue reservoir. To raise one gallon 150 feet, as "H." proposes, will require the power of eighteen gallons, not ten gallons. The Navigation Company require for locking boats, without allowing for waste or leakage, ten million gallons per day. The water power created by Flat Rock dam is the property of the Navigation Company, and all the surplus unemployed by the owners has been leased to manufactories, in which an immense amount of money has been invested in buildings, machinery, &c. This, therefore, is not available.

THE NEW YORK PUMP AT BEL

ANOTHER CHIP BY CHISEL.

Editor EVENING STAR.

Feeling anxious to see how the Worthington engine at Belmont water works was saving $3 89 per million gallons pumped into the reservoir, I visited the works, but found the engine lying idle while its exposed steam surfaces were being jacketted preparatory to being "gilted and staved with black walnut," upon which Mr. Graff laid so much stress in his recommendation to Councils. Mechanics throughout the country know at a glance Philadelphia made machinery by its fine finish and absence of useless decoration as compared with the rainbow-hued ornaments employed on Yankee tools. I saw lying at the works a lot of

PATENT PIPE, FROM JERSEY CITY,

and I also learned from a reliable source that the Chief Engineer proposes erecting more patent New York pumps, one at the Delaware works, and probably one at the Roxborough works. Has any one seen advertisements for bidders?

Having been raised in this city, and worked in its machine shops, I take a lively interest in the welfare of Philadelphia mechanics, and have, therefore, paid considerable attention to the introduction of Worthington pumps into our water works, as expressed in my former article. I read and carefully preserved all the protests published at the time, and in reviewing them I am surprised at their number and good quality, and wonder how our Councils dared, in the face of such honest opposition, pass the ordinance authorizing the purchase of these pumps.

I make a few extracts: Mr. B. H. Bartol, who for years managed one of our large machine shops, says in a communication to the Bulletin, June 26, 1868: "The question is not whether machinery may or may not be built in New York for Philadelphia. But it is, shall inferior machinery be built in New York at the $95,000, when a better article is offered here for $62,000.

"Engineer," in the Inquirer of June 19, 1868, says, at the close of an exhaustive article: "We have shown the superiority of the Philadelphia engine, and all the facts can be proved. We trust that our Councils will look well into the matter, and not blindly take the preferences of one official, as their guide.

"Hydraulic," in the STAR, of June 28, 1868, shows by actual figuring from the Chief Engineer's published statements, "that it will therefore be cheaper for the city to erect two Cornish Bull Engines at an expense of $100,000, than to accept as a present two patent Duplex engines, as recommended by the Chief Engineer.

CHISEL.

For the North American and U. S. Gazette.

Fairmount Water Works in Danger.

The above announcement will, we are sure, be read with consternation by all our citizens. The idea that Fairmount Water Works, the pride of our city, the object first sought for by all strangers, the structures so actually necessary to the health and safety of a large portion of our citizens, should be in the slightest danger, is too serious to believe, and yet we repeat, Fairmount Water Works is in danger—great danger.

Those who read the proceedings of our City Councils will have seen that Common Councils have passed an ordinance authorizing a loan for the extension and improvement of our various water works, as recommended by the present Chief Engineer; a part of the intended plan being the erection of a house sixty feet in front upon the mound dam at Fairmount, the sum of fifteen thousand dollars being asked for and included in the loan for that purpose. Do Councils know that the mound dam is that portion of the works upon which one walks when going to the circular pavilion at the end of the dam? It is, in fact, a portion of the dam itself, being made of earth instead of timber and stone, and in consequence more destructible should water find its way through it, than that part of the dam over which the water flows When we consider that it is proposed to cut through this bank, and erect a house upon it, we are justified in saying that Fairmount is in danger.

The smallest leak or opening through this earthen mound would probably carry it away, and eventuate in the destruction of the entire dam, and the disastrous results that would follow in a deprivation of the supply of water to any portion of our city, cannot be anticipated. And yet one branch of Councils quietly, and apparently without any suitable examination, pass an ordinance appropriating money for the extension of a work which, as at present, is admitted to be without its equal in this country for utility and beauty, and if to be improved, should only be done after a most thorough examination.

The Schuylkill Navigation Company, seeing the danger impending in carrying out the proposed improvement, sent a remonstrance to Councils against it, which was wholly disregarded. In addition to the danger, we are told that the proposed building will not be in architectural keeping with the present buildings, but rather an excrescence, to mar the symmetry and beauty of this now much admired place.

If councils really desire the present Fairmount works to be enlarged and improved, let them call in a consulting board of competent engineers, to decide upon such plan as will give the most power with the least expense.

We believe that the ordinance authorizing the proposed loan is now before Select Council for its concurrence. We ask them to pause, and weigh well the responsibility before they pass it.

SAFETY.

THE COURTS.

THE STEAM ENGINE CONTROVERSY.

Editor EVENING STAR.

The communication which was presented to Councils on last Thursday, signed by some of our leading manufacturing firms, protesting against "the proposition to confine the bids for pumping engines for the Twenty-fourth Ward water works, to such parties as will bind themselves to build the machinery in Philadelphia," seems to me to be entirely premature. I have taken considerable interest in the correspondence in our daily and weekly journals, and have yet to see the first article which desires to restrict the bids to Philadelphia mechanics. The general tenor of those communications have been to show our own citizens at leas as good a chance to build the machinery a New York mechanics. If firms in Ne York, or any other city, will put up the cessary engines, which can be proven t better; or if as good, cheaper than Phi delphians will build them, then it ma our duty to get them from outside parties.

But Philadelphians do object to paying high premiums for much inferior machines. The Duplex pump has been proven to be less economical and less effective than engines now in use in our city. And an article in the STAR, on Thursday, June 25, shows clearly (and these statements are not contradicted) that it would be cheaper to erect two Cornish build engines at a cost of $100,000, than to accept of two Duplex engines as a present.

The only remaining argument of the Chief Engineer in favor of Duplex engines, is, that "the cylinders are provided with a steam jacket; and this gilted and stared with black walnut." The steam jacket can be and has been applied to most every kind of engine; but the opinions of engineers as to its value differ, some of them dispensing with it entirely. In regard to being gilted, I am not aware of any Philadelphia mechanic who would be guilty of such a "fearful abortion."

The work done in our city is generally of such a character as not to require any paint, putty, varnish, or even gilding to hide the defects; but if it is required it can be done, and steam jackets added to the engines built by Philadelphia mechanics, at less than $95,000.

A Duplex Pump is now being erected at the Spring Garden Water Works, and if it possesses the merit the Chief Engineer claims for it, he will surely admit of it being fairly and impartially tested, and compared with other engines, by a jury of disinterested experts. What is claimed for Philadelphia, and what I hope you will insist on, is that a fair opportunity shall be given to Philadelphia mechanics to compete for this work under proper restrictions as to duty and quality of work.

ECONOMY.

An Insult to Philadelphia.

"New York takes the lead, of course. A well-known citizen thereof has just been awarded by the Council of Philadelphia a contract to construct a set of pumping machinery for that city. Bids were received from several Philadelphia mechanics, but New York won the palm though his price exceeded by some thirty thousand dollars those of his competitors."—*New York World.*

—The direct insult heaped upon our city by the N. Y. *World* is not unmerited. The facts of the case fully justify the sneer cast at our mechanics. The city has been placed in this position to be insulted by the action of the Chief Engineer of the Water Works, Mr. Frederick Graeff. In whatever light the action of that gentleman may be viewed, it appears equally reprehensible. The facts of the case which have caused the insult should be known. It was decided to erect pumping-engines in the Twenty-fourth Ward Water Works, and proposals were made by the various mechanics Mr. Graeff stated he wanted a certain kind of engine, and Messrs. Merrick & Sons offered to build it, and give adequate security for a certain price. After receiving the bid, Mr. Graeff decides to give the contract to Worthington & Co., of New York, *for* $30,000 *more than was asked* by Merrick, and to take a different kind of engine. Select Council was induced at his solicitation to ratify the contract, but it remains to be acted on by Common Council this afternoon. Of course it will be rejected. It is a deliberate insult to Philadelphia. Have we not machine shops equal, yes, superior to those of New York, that we must need give our money to strangers? If a contract can be well fulfilled in Philadelphia, we believe in letting it be done here, and not going to New York, where insult is the only return for the mistaken action of our officials.

TUESDAY, JUNE 23, 1868.

The Reputation of Philadelphia Mechanics.

Telegraph

THE controversy which has been attracting the general attention of our citizens in regard to the action of the Chief Engineer in going to New York for the manufacture of engines for the Twenty-fourth Ward Water Works, is one in which a very large proportion of our citizens are interested. It is not so much whether or not the Worthington, the Simpson, or the Cornish pump is the best, but it is whether Philadelphia is to say to all the country "we cannot make our own machinery; our mechanics are men who are inferior to those of New York, and we must go to New York for our local works." This is what the conduct of the Chief Engineer is endeavoring to say to the whole community. There are two views which should be taken of this matter. The first of which is in regard to the merits of the two kinds of pumps. The second is the evil effects which must result in case of the success of the plans of the Engineer. From the direct testimony of a number of thoroughly competent engineers it is probably, if not positively certain that the Worthington pump is not fitted for the work required of it. That it is complex, nearly twice as expensive, and still inferior to the other kind mentioned. We have received a communication from one qualified to judge, a few lines of which we will quote:—

In the annual report of the Water Board of the City Councils of Charlestown for 1867, it is stated that the Cornish pumping engine at the Spring Garden Water Works, raised 50,000 gallons of water one foot high by one pound of coal—equal to a duty of 41,700,000 pounds of water raised one foot high by 100 pounds of coal. This was not the best result, however, for the Cornish engine at the Twenty-fourth Ward gave an average duty for the whole year, 1866, of 49,892,382, while in the month of December of the same year the duty was 55,871,328. In the above calculations *the whole of the coal used* for all purposes of raising steam, banking fires, etc., etc., was included. In contrast to the above it is alleged that the Worthington pumping engine once gave a duty of 78,561,159—*i. e.*, 266,752,325 gallons of water were raised 147 feet by 416,117 pounds of coal. At the foot of the same page is appended a note, in small type, stating that 266,000 pounds of coal were also used for banking, firing, and testing engines, boiler, etc., and sundry other purposes. Now, if this amount of coal be added to that only charged, as is manifestly only but just—having been done in the other case—the duty falls at once to 47,935,818, which is considerably lower than the monthly duty of the Twenty-fourth Ward engine, stated above—viz., 55,871,328.

As a mere experimental duty, however, it is of no significance, and as an offset to it we will bring forward the celebrated Fowey Consul's experiments, where a duty of 130,000,000 was obtained from a Cornish Engine, vide the *London Engineer*, July 27, 1866.

From this evidence, and it is from one who we have every reason to believe knows of what he writes, it will be seen that even the excuse of superior fitness, of the superiority of the "Worthington" is done away with, and the partiality of the Committee has not even for an excuse the plea of superior merit in the one for which he deserts, if not insults, the mechanical interests of our city.

THE WORTHINGTON PUMP.

The communication presented to Councils yesterday, by a number of the leading manufacturing firms of Philadelphia, does them high honor. Ever since the real nature of the opposition to the introduction of the Worthington Pump at the Twenty-fourth Ward Water Works has been understood, it has been very plainly seen that the true interest of Philadelphia mechanics does not lie in the direction of a narrow sectionalism, but in that of a broad liberality. The firms that make this honorable protest in favor of fair competition represent thousands of the best mechanics in Philadelphia, as well as millions of Philadelphia capital, and their remonstrance against the proposed discrimination in favor of their own city not only bespeaks a manly and high-toned spirit, but shows that they well understand what is the truest policy for the encouragement and advancement of Philadelphia mechanics and manufacturers. Firms that are actuated by this sort of public spirit can afford to meet all fair competition, no matter whence it comes, and we trust that Councils will give a respectful and cordial consideration to the communication which was yesterday received, and that the New York press will do the mechanics of Philadelphia justice, by the publication of this very creditable manifesto.

"CORNISH BULL" vs. "PATENT DUPLEX."

Editor EVENING STAR.

In the report of the Chief Engineer of the Water Department, which was presented to Councils on May 28th, he makes a comparison of the relative merits of the different kinds of pumping engines used in the larger cities of this country, by reducing the amount of work performed by them to the uniform standard of the number of pounds of water raised one foot high by the combustion of one pound of coal.

In this comparison he shows that the Patent Duplex Engines, such as he recommended to Councils stand first, and the Cornish Bull Engines at West Philadelphia Water Works third, in order of duty. But the duty of the Patent Duplex engines has been proven to be erroneously calculated, and instead of being above that of the Twenty-fourth Ward works, (530,400 foot pounds) it is below it. (480,000 foot pounds). The Twenty-fourth Ward engines were designed and built by a Philadelphia mechanic. They have been running for about fourteen or fifteen years—almost without intermission—and are sadly out of repair.

The Chief Engineer in his last yearly report, page 16, says of them: "They have been sadly overtaxed; they have been kept running constantly, and much of the time at too high a speed. The leakage at the joints of the pumps is excessive, and the supply depends entirely upon the holding together of the much worn and overtasked engines and pumps."

Yet with all these disadvantages these engines do a duty second to but one other engine in the country, and if fair reports of the running of the latter could be obtained, it is believed that the Cornish Bull Engine at the Twenty-fourth Ward works will be found to do a better duty than any other pumping engines in the country. They have proved themselves, after years of trial, to be both efficient and economical; why reject this class of engine and adopt as an experiment either a Simpson or Duplex engine? Knowing that these engines could not compete with Cornish engines, the latter were excluded by the Chief Engineer when he asked for bids.

But economy of pumping does not depend alone upon the coal used, for there are other items which enter into the expense, such as labor, repairs, oil, tallow, etc.

In the report of the Chief Engineer referred to, see appendix to Journal Select Council, page 237, he makes the following statement:

The cost to raise one million gallons at the 24th ward works last year was....... $19 12
The cost to raise one million gallons at Charlestown last year, assuming the price of coal there to be the same as was paid at the 24th ward works, was........ 15 23

Showing a saving in favor of Charlestown for each million gallons raised, of...... $3 89

But in the comparison the one very important consideration of height is omitted. If, therefore, we divide $19.12 by 230 (the height of the West Philadelphia Standpipe) and $15.23 by 147, (the height of the Charlestown Reservoir, the cost of raising one million gallons one foot high last year, was

At the Charlestown Water Works....10 3-10 cts.
At Twenty-fourth Ward Water Works..8 3-10 "

Showing a saving in favor of the Twenty-fourth ward Engines for each million gallons raised one foot high of two cents.

The Chief Engineer wants two engines, each capable of raising five million gallons per day into a reservoir 215 feet high. Assuming that a daily average of five million gallons, (the capacity of but one engine,) is sufficient for the present supply of the West Philadelphia district, we have 215 x 5 x 2=$21.50, a daily saving in using engines similar to the Cornish Bull's at the Twenty-fourth ward, in place of patent Duplex's, as recommended by the Chief Engineer.

The saving, of course, would be duplicated, if both engines were run to their full capacity; and if the West Philadelphia engines compare so favorably in their present dilapidated condition, it is fair to assume that, with new engines, the saving would be still greater. But $21 50 per day is the interest at 6 per cent. of $130,791 67.

It will, therefore, be cheaper for the city to erect two Cornish Bull Pumping Engines, similar to those at the Twenty-fourth ward Works, at an expense of $100,000, than to accept as a present two Patent Duplex Engines, as recommended by the Chief Engineer.

These statements seem incredulous, but the facts and figures are with them, and show their truth. The Patent Duplexs' are New York make, the Cornish Bulls were made in our city. Let our citizens judge for themselves, and see if any personal favoritism should force them to pay $95,000 for a pair of engines of the New York build.

HYDRAULIC.

The Pump Controversy.

The Steam Pump controversy, which has hitherto been carried on by the Chief Engineer of the Water Works on one side, who prefers the Worthington pump, and Merrick and Company on the other, who are ready and willing to build a Simpson pump, has been intensified by a new intervention.

Messrs. Morris, Tasker & Co., manufacturers of iron mill work, &c.; M. Baird & Co., manufacturers of marble work; A. Whitney & Sons, makers of car wheels; R. D. Wood & Co., manufacturers of iron pipes; Miskey, Merrill & Thackara, manufacturers of gas fixtures; William Sellers & Co., engineers; and Harrison Brothers & Co.—have sent a memorial to Councils, in which they say that the proposition

"to confine the bids for pumping engines for the Twenty-fourth Ward Water Works to such parties as will 'bind themselves to build the machinery in Philadelphia,' is calculated to *injure and degrade them in their business relations* by fostering a sectional feeling, which is liable to work greater injury to the interests of our mechanics than can be counterbalanced by any seeming advantage that may be gained by the adoption of so contracted a policy, by preventing them from competing in markets upon which they are dependent for a large proportion of their trade."

In other words, these gentlemen say, if Philadelphia arrogantly declares that she will buy nothing that she needs for public use in other places, why should not other places put the same rule in force against Philadelphia? Are Merrick & Co. so profoundly local in their patriotism that they will not sell their machinery to buyers in all parts of the country, and in foreign countries? Could they ever have succeeded in business if they had resolved that they would do no work except for Philadelphia? Let the idea that no one has a right to buy the best articles wherever he can find them, but must buy them of his own townsmen, be carried out by inhabitants of other places, and what would become of Philadelphia mechanics? The fact is, this effort to obtain the job for Merrick & Co. has been conducted in a selfish manner. The whole thing has been talked about as if it was a most unjustifiable thing to buy out of Philadelphia what we could not get in its best condition *in* Philadelphia. This would be a stupid policy, but all the clamor proceeds exactly upon such an assumption.

There is no doubt that the desire of Merrick & Co. to get this job has been the moving influence which has produced all the noise that has been heard upon the subject. It has been skilfully managed by an appeal to local pride; and the stunning question, Ought Philadelphia to purchase steam pumping engines in New York? has been relied upon to play a very conspicuous part in the controversy. But really this is not the point of the case. Nobody will say, all things being equal, that we ought to discourage our own mechanics, by buying elsewhere articles which can be made here as well as elsewhere. The Chief Engineer says that the best pump that he knows of is the Worthington pump. Mr. Graff is a man of science and experience, whose duty it is to see that the City gets the best. The Worthington pump, he says, is the best; and as the Worthington pump is a patented machine, it must be obtained of the owner of the patent, or not at all. If anybody in Philadelphia has a right to build a Worthington pump, and has the means of furnishing it, then there would be no excuse for going elsewhere. But we must go to New York for this pump, or we must do without it. Now, what do Merrick & Co. propose? Do they expect to build a Worthington pump? No! But they declare that an English pump—a patented article in that country, we suppose, but subject to the risks of piracy and imitation here—is better than that which the Chief Engineer recommends; and they insist that, because they cannot build a Worthington pump, Philadelphia has no other resource than to employ them to build a Simpson pump, in order to patronize Philadelphia mechanics—*i. e.*, themselves.

The whole thing comes down to this:—Whose opinion are we to take—that of Mr. Graff, or that of Merrick & Co.? Who has the most interest? No one would dare to insinuate that the Chief Engineer is doing anything but what he considers the best according to his judgment. But Merrick & Co. want a job; and—"that's what's the matter." Who is right—Graff, or the Merricks? Manifestly no member of the City Councils is competent to express any judgment upon a matter purely scientific, and in some degree dependant upon actual test. If there is no confidence in what the Chief Engineer recommends, let there be a scientific commission established to examine and report upon the question. It would cost very little in comparison to what may be lost if an inferior pump, not able to do the work required, is adopted.

SELECT COUNCIL.

WILLIAM S. STOKLEY (U.), president.

The CHAIR presented the following:

To the Select and Common Councils:

The attention of the undersigned having been called to the proposition before your honorable bodies to confine the bids for the pumping engines for the Twenty-fourth ward Water Works to such parties as will "bind themselves to build the machinery in Philadelphia" respectfully represent:

That the adoption of such a course is calculated to injure and degrade them in their business relations, by fostering a sectional feeling, which is liable to work greater injury to the interests of our mechanics than can be counterbalanced by any seeming advantage that may be gained by the adoption of so contracted a policy, by preventing them from competing in markets upon which they are dependent for a large proportion of their trade.

MORRIS, TASKER & CO.,
M. BAIRD & CO.,
A. WHITNEY & SONS,
R. D. WOOD & CO.,
S. FULTON & CO.,
ROBERT WOOD & CO.,
R. GARSED,
HOOPER & TOWNSEND,
WM. SELLERS & CO.,
MISKEY, MERRILL & THACKARY,
HARRISON BROS. & CO.,
HARRISON, HAVEMEYER & CO.

Laid on the table for the present.

Philadelphia Mechanics.

The demogogues in Councils who opposed the contract for a WORTHINGTON pump for the Twenty-fourth Ward Water-works, on the ground that it was not awarded to a Philadelphia firm, may be delighted to be informed that their action has already taken from this city about *one half million of dollars in work ordered from other cities*, and designed to benefit our own artisans. The earnest protest made to Councils last Thursday by the leading machinists of Philadelphia, is some slight indication of the alarm caused by the recent injudicious discussion in both chambers; but while these mechinists content themselves with a protest, we have good authority for the statement we have made in regard to the effect already produced. Councilmen should comprehend that the mechanics in Philadelphia are too sensible not to understand the real question in this controversy. It is not whether $90,000 shall be expended in New York instead of Philadelphia, but whether the principle is to be recognized that we shall not go beyond our own municipal limits for work and material, when these are superior to those furnished by our own people. If the doctrine of certain members of Councils is to obtain that Philadelphia shall have the preference no matter what may be the relative cost or quality of the work, then we may at once bid farewell to the future manufacturing importance of this city. Other municipalities and corporations will not be slow to follow our example, and our large machine shops may close their doors and discharge their thousands of men because the pride of place will extend and no work will be ordered in Philadelphia from distant cities. Thus in a paltry squabble over a contract for $90,000 which might go to New York, Philadelphia is likely to lose millions in the withdrawal of work from our own city. The demagogues in councils who have placed us in this position ought to be remembered by their constituents, and every mechanic and laborer in Philadelphia should make it his particular business to punish those who thus misrepresent their true interests.

Rewards.

We were extremely fortunate in making our visit to the Lake at just the time when a favorable wind drove the little plant (floating by adhering bubbles of oxygen gas) to the outlet; thus bringing within the space of a cubic inch as many of the filaments as could be separated by filtration from a hogshead of the water a short distance above the dam.

I have not yet satisfied myself as to the origin of these little filaments; whether they are the entire plant, or once constituted part of a more complex alga. They are more minute than in any true conferva known to me, being only 2,500th to 2,000th of an inch in diameter, and from a 50th to the 20th of an inch long. I strongly suspect that they are derived from a species of the genus *Nostoc* of botanists. This genus usually consists of a globular or oblong vesicle, from the size of a duck-shot to the bigness of a plum, and filled with mucus which is loaded with minute bead-like filaments. When the little bladders burst, the contents escape, the mucus dissolves in the water, and the filaments are set free. Sometimes the waters of small lakes are filled with these small bladders of *Nostoc.* Since examining the water I have had no opportunity of revisiting the lake to verify my conjecture.

The question naturally arises why this plant should have made its appearance in such quantities, and not have been noticed before. We can only reply that the case is not a singular one. Even in the higher order of plants it is a common circumstance for a particular species to abound at one time and then almost disappear for years; and in the lower vegetable tribes, especially those which inhabit the water, is this strikingly the case. The present Summer has been unusually favorable to vegetation of all kinds, but what are the circumstances which have so remarkably multiplied this little alga I have not yet determined. It is a plant of short duration, and should it reappear another season, the probability is that it will not annoy us long. Very likely more or less of it occurs every Summer, but this is the first time that it has been offensively brought to our notice. Even when it was most abundant in the Croton, I do not believe that it communicated any unwholesome quality to the water. Its odor and taste were certainly unpleasant. While the unpleasant quality of the water continues, the ordinary filter will remove all the suspended matter, and a little fresh-burned vegetable charcoal, or animal carbon, will take away the disagreeable smell and taste. A good method of using the charcoal is to heat some small pieces red-hot, and, after quenching, inclose them in a little bag of gauze, and suspend them in the water. The charcoal should be removed or reburned every day or two.

I am, gentlemen, very respectfully your obedient servant,
JOHN TORREY.

NEW-YORK, Aug. 25, 1859.

To Myndert Van Schaick, Thomas B. Tappen, and A W. Craven, Esqs., Croton Aqueduct Board:

GENTLEMEN: In compliance with the request received from your Honorable Board, that I would make a chemical investigation and analysis of the Croton Water, for the especial purpose of ascertaining the cause of its peculiar unpleasant condition, I beg leave to offer the following report as the result of my investigation:

On the 12th of August instant, I received from Mr. A. W. CRAVEN, Chief Engineer of the Works, three demijohns of the water, numbered and labeled as follows:

No. 1. Water from the mouth of the Aqueduct, at the Receiving Reservoir.

No. 2. From the East side of the Gate-house, southeast corner of Receiving Reservoir, South Basin.

No. 3. Water from Forty-second-street Reservoir.

On emptying the water from each of the demijohns into separate large glass jars, it presented the same general appearance in all. The color when viewed thus in bulk, by reflected light, was of a faint brownish hue, but by transmitted light it had a shade of green. It was nearly transparent, but upon close inspection some minute particles were observed suspended throughout the mass. The taste and odor of each was the same as that of the water drawn from the hydrants in the City, and in these particulars closely resembled the water of ponds and marshes abounding in vegetable matter. After remaining at rest for a few hours a deposit of light flocculent matter was observed at the bottom of each of the jars containing the water. Portions of this matter were removed and examined with a microscope, and in each cas

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er streets offers great facilities for coal ts, engine pumping and boiler-rooms, and the location of a stand pipe with- expense to the City for real es- . In like manner unused space beneath the oton Reservoir at Fortieth-street will give vault and pumping engine and boiler room, with no cost but that of adaptation, which will more than offset the extra cost of influent conduit. In addition with steam power here located, the extra cost of a supplementary pumping engine to draw fresh water from the Croton Reservoir and raise it into an elevated tank for the supply of Murray Hill would be but comparatively small. The service of this high ground is now an imperative necessity, and there is no more ready means than this for the proposed. It has been adopted by the Croton Department for the supply of the elevated grounds above Manhattanville, and is now being carried out and nearly completed at High Bridge.

There is but little data by which to determine the quantity of water necessary for flushing the streets. It must depend somewhat on the condition of the streets, class of paving, grade of streets and character of inhabitants. I estimate that throughout this district a flow of 4 gallons per second, or 240 gallons per minute under the head which would be given by the pumping engine, would be ample, as some deduction should be made for the time occupied by the waterman in passing from one hydrant to another, in which there is no flow. The constant discharge has been estimated at 200 gallons per minute for a hydrant. It now follows to determine the number of hydrants which will be in use at one time. Below Fourteenth-street the miles of street measured on the top fall but little short of 120 miles, and the number of intersections of streets, 10,293. By placing a hydrant at each intersection the average distance under the control of each will be about 600 feet, or were the intersections uniformly crossings, 150 feet in each direction. If we suppose that twelve minutes would be necessary for the flushing of the street under the command of one hydrant and in passing to the next, then the total time occupied would be 12,348 minutes or 204 hours, or 25¾ days of eight hours each. It may, therefore, be said that the force required to flush the City below Fourteenth-street would be twenty-six gangs, say of three men each, making eight hours per day or 78 men. The supply of water required would be 5,200 gallons per minute. In view of the establishment of pumping engines for flushing purposes, it seems expedient to consider whether there might not be other purposes served at the same time. During the past month the Croton River has been unusually low; most of the City supply has been drawn from the large reservoir in the Central Park, the flow of the river not being equal to the daily consumption of the City. Street sprinkling and sidewalk washing have lately been cut off, and were it possible, the use of water for fire purposes would have been stopped, and those purposes might be served by the sea water from the flushing engines, without the intervention of fire engines. For fire purposes, I estimate the greatest quantity that would ever be required at any fire equal to the delivering of seven of the best steam fire engines, discharging 600 gallons per minute, or 4,200 gallons total per minute, and there are but few places in the City where the Croton mains have ever furnished, or could furnish, such a quantity within the limits of draft at any one locality. To recapitulate the data on which the scheme herewith presented has been based: Estimated quantity for flushing, 5,200 gallons per minute; maximum for fire purposes occasional use, 4,200 gallons per minute. The engine house is supposed to be placed at the angle of Canal and Walker streets; the pumping engines to be two, each to be of daily working capacity of 6,000 gallons per minute, and in case of need a strength to distribute 9,000 gallons per minute, without risk, one engine only to be in use, the other to be a reserve engine in case of repair or accidents to the first. The pumps to deliver the water into a stand pipe under a head of 100 feet above the tide level; but this stand pipe to be high enough for a head of 150 feet. The 100 feet would be the usual working pressure, the 150 feet in cases of very large fires. The stand pipe to be four feet in diameter with stairs around and to the top of the same, thus adding an architectural feature to the locality. The pumps to draw their supply by gravitation from a well, fed by a four feet brick conduit from the river discharging into the stand pipe, and thence the distribution will be through mains of twenty-inch cast-iron pipe with gradual reduction to sixteen-inch, elve-inch, eight-inch, and finally, for the last t, to six-inch. The cast-iron pipe to be of vie Brooklyn pattern. The map will xplain the pipe distribution. I pro-

153

Croton 2

While the preceding investigation was in progress, I was requested, on the 16th inst., to visit the Croton Lake, in company with the President and Mr. J. C. Winder, Assistant Engineer. We traversed the entire length of the Lake, a distance of five miles, taking samples of water from different parts of it. The first sample was procured from that part of the dam where the water first enters the aqueduct. The next about one-fourth of a mile distant. The next sample about a mile further on. The fourth from the vicinity of Pine's Bridge. Fifth, from Kisco Creek, where it mingles with the water of the Lake. Lastly, a sample from the head of the Lake.

A physical examination, made at the time of taking the samples, revealed nothing unusual or different from what I had observed in the water obtained from the Reservoirs in the City.

The odor and taste was similar, and the same kind of minute floating particles were observed in each, when examined with the aid of a magnifier. The extraneous particles were most abundant in the water from the dam. They were found to be less apparent as we approached the head of the Lake, where the water was clear and transparent.

On the following day I again visited the Lake, in company with Prof. Torrey, who, through some misunderstanding, did not accompany us on the first excursion.

Upon arriving at the Lake, we learned that Mr. Adamson, the Keeper of the Dam and Gate, had observed since the preceding day, an unusual quantity of a light green matter floating on the water near the dam. Upon the slightest agitation of the water this green substance was diffused so as to appear lost, but with care he had procured a pail-full of it, which he had reserved for our inspection. Some of the same material we procured ourselves from the surface of the Lake, and we took home with us samples for chemical and microscopic examination.

Before leaving the spot, we had a strong conviction that to this substance might be attributed all the unusual qualities lately observed in the Croton water throughout the City. It had precisely the same taste and odor, but in a very concentrated degree. Of its vegetable nature we entertained no doubt.

A chemical examination of the green matter gave the following results:

A portion of it, mingled with water, was gently heated and finally boiled. Upon the first application of a moderate heat, the color quickly changed from a green to a light buff color. When near the boiling point, the whole was converted into a thin mucous substance, and by continuing the heat the odorous matter nearly all disappeared. Some of the green matter, mixed with water, was submitted to distillation, when the odorous principle passed over in union with watery vapor, and condensed in the receiver as a colorless transparent liquid, possessing the characteristic flavor of the original substance. A portion of the same green material was agitated with pure sulphuric ether, after subsidence, the ether, which arose to the surface, was separated and allowed to evaporate. A minute quantity of an oily substance slightly tinged with green, was thus obtained. The coloring matter was probably due to chlorophyll, the green coloring matter of plants.

When examined with a microscope of high power, the green substance was seen to consist of some minute aquatic plant, a detailed description of which is given by Dr. Torrey. There was also observed among it a few of the living animalculæ, such as the microscope usually reveals in unfiltered water from fresh water ponds. It may be worthy of remark that, so far as I have observed, the apparent number of these living forms is much less in the Croton water now than I have noticed in former examinations.

It is quite evident that the flavor of the Croton water, so much complained of during the past week or two, is now rapidly disappearing, and that the water has nearly regained its normal condition. I believe the unusual little plant which we have found in it, and which gave it the peculiar flavor complained of, to be of a perfectly harmless character, and consequently that the wholesomeness of the water has not been impaired by it in the least degree.

I have drank freely of it during the time when it was in its worst condition, and have partaken of the green matter which we procured from the Lake, in its concentrated state, and also after it had been converted into a jelly by heat, without experiencing any ill effects whatever from it.

Filtration of the water through the porous filters, now so much in use, was found to separate effectually all the minute floating particles from it, and thus rendered it more palatable.

Upon comparing the present analysis with the results that I obtained in the year 1836, and again in 1842, as well as with the analysis by Prof. B. Silliman, Jr., in 1845, I find that the Croton water at the present day is purer, or, in other words, contains a smaller proportion of inorganic and other constituents than has been found in it since the liberality and wise forethought of our rulers caused the introduction of this source of countless blessings to our great City.

Respectfully, your obedient servant,
JAMES R. CHILTON.

Mr. M —I believe you have the papers, ge emen. If this company Norristown, I don't see how it can benefit ity. We want the best and the cheapest that can be obtained. I think it but just that Mr. Worthington should have a chance to be heard. He expresses a desire to appear under oath to testify to any matter.

Mr. Bardsley read an extract from the letter of Mr. Henderson in regard to the manner in which the contract had been awarded. I say a contract had been made but not approved by the city. It is not valid unless approved by the city.

Mr. Henderson.—The contract not having been made I ask that I be allowed to bid for it.

Mr. Bardsley.—Do you say whether the committee had the right to approve the resolution of Mr. Hanna, or not?

Mr. Henderson.—I cannot answer the question because I am not sufficiently acquainted with the facts in the case.

Mr. Bardsley.—That resolution was agreed to with twelve members of the committee present.

Mr. Henderson.—Did that appear in the daily papers?

Mr. Bardsley.—I don't know. We are always happy to give our work to the reporters; but sometimes they forget committee meetings and sometimes we don't want them. There are certain parts of the city business and movements of the committees which we do not desire to be published, and therefore they are not admitted. The Committee on Finance in nine cases out of ten request the reporters to retire. The chairman gives them all matters concerning the public.

Mr. Henderson.—With all due deference to the Chief Engineer and all who follow him, I think I can show that I can build a better engine than that made by Mr. Worthington.

Mr. Bardsley.—This is not to the point. This committee was appointed to decide the subject of the illegality of the contract, and as Mr. Henderson has failed to show anything wrong in the contract, I think we have completed our business. We are authorized to make this contract, and we have done so.

Mr. Henderson.—Is it fair that one man should distribute the work of the city.

Mr. Bardsley.—When the Legislature changes the law we will abide by it. There has been a good deal of talk about this matter. I am as good a friend of the mechanic as any one. But we all go to the place where we get our goods the cheapest.

Mr. Henderson.—I merely came here to have this matter explained. The law in regard to the subject is a bad one, and should be changed. If you go to the strict rule of the law I can ask nothing. The mechanics of Philadelphia should be favored I think.

Mr. Bowker.—I was always under the opinion that it was customary to advertise everything.

Mr. Henderson.—It always has heretofore.

Mr. Bardsley.—Will you state any particular case.

Mr. Henderson.—Yes, sir, of the Spring Garden Water Works.

Mr. Bardsley.—That was for old work, or rather for repairs, and the money was to come out of the taxes.

Mr. Bowker moved that a report of the facts be made to Councils at the next meeting, and that the committee adjourn without day. Agreed to and adjourned.

Copy

141

Phila July 10th 1868

Hon Morton McMichael
Mayor

Dear Sir

I notice by the proceedings of Councils yesterday that what has been termed the Worthington Pump Swindle has at last been consumated. The project is to pay a resident of Brooklyn N.Y. $95.000 for Machinery when a better article guaranteed to do all that was required was offered by parties in this City at $33.000 less money. I hope you will examine into the matter fully and should you do so am certain you will Veto the bill. It is the entering wedge to rob the City Treasury as time will develop if this Contract is consumated. As an Engineer (now out of the business) I have no hesitation in saying that the cost of the Worthington Machinery to the builder will not reach the sum of $50.000

Respy Yours

Signed B. H. Bartol.

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cleansing the city to use covers to
in collecting ashes. Adjourned.

In Common Council.—A communication was received from the Chief Engineer of the Fire Department, announcing the suspension of the Washington and Moyamensing Hose Companies, for riotous conduct.

A communication was received from the Chief Engineer of the Water Works, in reference to the Twenty-fourth Ward Water Works. The Chief states that the designs and estimates for the engine house and its connections were, after mature deliberation (and the consideration of several forms of engines), based upon the use of one of peculiar construction, on which the builder holds a patent right, and which can only be obtained from him.

Much thought, investigation and time having been expended upon these designs, it is therefore, with great regret that I find the authority to make a contract for the engines defeated in Common Council, not through any demerit in the engine in question, but through influences and issues of a character entirely foreign to the subject, and as I firmly believe, detrimental to the best interests of the city.

Any description of pumping engine to which I can give my approval, other than the one for which the whole work has been designed, involves considerable increase in the cost of all the work, necessitates additions to the estimates already made for engine house and its fixtures, and involves further delay in getting up new designs and collecting materials for the construction of the house and foundation of a kind not originally contemplated. I have already in former communications shown that the inhabitants of the Twenty-fourth Ward are daily in danger of being left without a supply of water, through possible failure of the dilapidated engines upon which that supply depends. Whilst I am willing to assume all the ordinary responsibility incident to the usual course of duties assigned to me, I cannot consent to be held accountable for matters entirely beyond my control.

As disaster may occur from delay, I am constrained to ask release by suitable resolutions, of the responsibility caused by the prolonged detention of this work, which must necessarily occur if I am obliged to alter the character of it, by the reason of the adoption of engines other than those for which "the drawings have been made."

A communication from Henry R. Worthington was also read, informing Councils that he would agree, if he should obtain the contract for the Twenty-fourth Ward pumping engine, to draw no money in payment except in shape of drafts in favor of Philadelphia manufacturers for work manufactured in said city, and at the prices at which they may be at that time offering the same in open market.

Mr. J. C. Martin offered a resolution, instructing the Committee on City Property to inquire into the expediency of importing 40,000 English sparrows. Referred.

Mr. Willits presented an ordinance, giving authority to S. W. Welsh & Son to erect a

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Croton 3

numerous minute aquatic plants and siliceous remains (of Brittle-worts (*Desmideæ*), with a few living animulculæ, were easily detected. A similar sediment was obtained from a new filter attached to the hydrant in my laboratory, by allowing the water to pass through it for a short time. In this concentrated form it was of a decidedly green color.

By the application of nitrate of silver to each of the samples of water, they were found to change color quickly, under the influence of solar light, to a deep claret color. The change of color being greater than I had observed by similar treatment of Croton water on former occasions, indicated that it contained an unusual amount of vegetable matter.

One gallon (231 cubic inches, 58,327 grains) of the water No. 1, was carefully evaporated in a porcelain dish to dryness; and the dry residuum, which was of a brown color, was found to weigh 3.68 grains. This was heated in a platinum capsule until the organic matter was burnt off. During the combustion it emitted the odor of burning vegetable matter, mixed with a small quantity of animal substance. It was again weighed, and found to have lost 0.92 of a grain. The solid contents, therefore, of one gallon of water No. 1 consisted of

	Grains.
Inorganic (mineral) matters	2.76
Organic (chiefly vegetable) matters	0.92
Total	3.68

One gallon of water No. 2, similarly treated, gave

	Grains.
Inorganic matters	2.769
Organic matters	0.930
Total	3.699

One gallon of water No. 3, treated in the same way, gave

	Grains.
Inorganic matters	2.765
Organic matters	0.940
Total	3.705

A qualitative analysis of the inorganic matters showed the presence of lime, magnesia, sulphuric acid, chlorine, soda and a trace of potassa.

The organic matter was mainly composed of extremely minute aquatic plants, of which an account will be given by Dr. Torrey in his report; but I detected in it also crenic acid, in combination with alkaline bases.

To determine the relative proportions of the several constituents of the water, I made a quantitative analysis of three gallons of the water No. 3. The results thus obtained, when reduced by calculation, gave the following as contained in one gallon:

	Grains.
Chloride of sodium	0.4040
Chloride of calcium	0.1036
Chloride of magnesium	0.1466
Sulphate of lime	0.3536
Carbonate of lime	0.8366
Carbonate of magnesia	0.3900
Carbonate of soda, and a trace of carbonate of potassa	0.2700
Silica, alumina, and a trace of iron	0.1698
Total	2.6742
Organic matters	0.9158
Total grains	3.5900

Continued from 149

expense has been made. There are also other purposes to which the salt-water service could be applied besides flushing and fire, which would, it is true, somewhat increase the cost of construction, but by profitable returns would reduce that of maintenance very considerably. I refer particularly to the use of water for the purposes of power in cases where the cost of attending the engine is large in proportion to the fuel necessary for the power. Throughout the wholesale portion of the City, the use of steam hoists has become almost indispensable—an expedient costly in itself, requiring engines and boilers, and engine drivers. For the service alone in a first-class store the expense cannot be estimated at less than $500 per annum even when used in connection with steam-heating apparatus. At the London and Liverpool dock all hoisting has been done for years by hydraulic hoists, driven by pumps at the extremities of the docks, with mains along the sides of the dock connecting with the cylinders of the hoists. By the turn of a cock letting on the water, goods are raised from the holds of ships to the wharves, or distributed on the floors of the warehouses. The dock gates are swung in the same way, and the ships worked out of the docks by hydraulic capstans. In exactly the same way could the goods in our stores and warehouses and at our docks be distributed, using the flushing mains as the source of power. If the flushing be done after business hours the size of pipes would require less change dependent on the extent of the application to power purposes. In certain localities the disposition of the pipes would have to be changed, and more laid down, so that no wholesale business would be without its pipe throughout the extent to which it would be used. No estimate has been made of what would be the expense of such change in mains and pump as would include the purposes of power with those of flushing and fire. It is only offered as a suggestion that in this way also the use of Croton water as applied to steam purposes may be reduced, and the works made remunerative. In conclusion, this report, although not as complete in details as I could have wished, still I trust it is sufficiently so to show that the scheme is perfectly practicable, and well deserving of consideration for its economy of construction and maintenance. With improved system of sewerage and paving, the expense of street cleaning would be very much reduced, fire engines done away with, and a much better and more readily applicable service supplied. In addition, should it be considered expedient to adopt engines and mains for the purposes of power, the income from this service might soon make the whole apparatus almost self-sustaining, and with economy to the lessees of power.

Respectfully submitted,
W. E. WORTHEN, Engineer, M. B. H.

The report was referred to the Sanitary Committee, with directions to ascertain what sanitary effect the use of salt water would have upon the public health.

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see 151 for first part

them for their services when engaged, $100 per hour.

After leaving the tug we started for the basin, and after a wearing ascent we reached it. A large number of curious visitors were lined along the railing, and various remarks were made about the non-seeing of the effect of the tug's pumping. A workman finally explained to them that the water was forced in through the under part of the reservoir. On inquiring as to the cause of the stoppage of the wheels, the reply was elicited that the stoppage was for the purpose of allowing the volume of water in the forebay to increase, there not being a sufficient quantity to work the wheels and force at the same time.

As the matter now stands we are but little better off than we were two weeks ago. No doubt if the Fuller was allowed to work to her full capacity a change would be soon noticeable, but under the present management the only difference we can note is the transfer of $4000 from our municipal coffers into the pockets of a New York firm.

154

1

PROPOSALS
For Cast Iron Pipes, &c.

SEALED Proposals will be received until the 15th February next, inclusive, by the Watering Committee, for the following Cast Iron Pipes and Castings, to be delivered at the times specified—the offers to be endorsed for Iron Pipes and Castings.

300 pipes of 6 inches clear in the diameter,
1 branch of 10 inches with double side openings,
1 do of 10 inches with 6 inch side openings,
1 do of 10 inches with 4 do.
3 branches of 6 inches with double side openings,
3 do of 6 inches with 4 inch do.
3 do of 6 inches with 3 inch do.
10 force plugs,
10 circular plug pipes of 4 inches,
10 do do of 3 inches,
} To be delivered on or before the 1st May next.

100 pipes of 4 inches clear in the diameter,
150 do of 3 inches do.
20 stop cock frames and levers,
10 stop cocks of 10 inches,
20 do of 6 inches,
10 do of 4 inches,
20 do of 3 inches,
} To be delivered on or before the 1st of June next.

The whole of the said iron pipes and castings, in addition to being made so as to stand the proof as hereafter stated, must be executed in the most perfect and workmanlike manner, and be free from defects of any kind, and must be made of strong tough iron, which shall be of such quality as will not crack by handling, drilling or dressing.

All the pipes and other castings shall have joints of depth and size according to the directions to be given to the contractor, and shall be cast free from overlaps or projecting seams where the patterns part; the mould shall in all cases be dusted with charcoal and meal, so as to be clear from sand, the internal and external parts of the pipes and castings where they interlap into each other, or are to be joined together.

The patterns for the 9 feet pipes, and all other patterns are to be found by the contractor, and shall be in form as shall be approved. the pipes, branches, and such other castings as require proof, shall be proved at the furnace by Bramah's pump, under a pressure equal to 300 feet head of water, and the proof to be made under the inspection, and to the satisfaction of the agent or agents of the Watering Committee—all the cost in making such proof to be at the expense of the contractor.

The pipes will be proved whenever it may be required by the contractor on reasonable notice given to the Superintendent of the Water Works. The pipes may be delivered in parcels previous to the specified time of delivery.

The Proposals to state the price per foot, running measure of the pipes, and the prices per ton for stop cocks, branches, &c. and for plain castings.

The offers may be extended for the delivery of what other pipes and castings may be wanted during the year, which if approved will be included in the contract, viz:

For 1500 feet of 16 inch pipes, with branches, stop cocks, &c.

For 500 feet of 10 inch pipes, with branches, stop cocks, &c.

FRED. GRAFF,
Superintendent of the Water Works,
No 200 Cherry street.

28-d15Fe

2

WHO CAN ANSWER?

Edito[illegible] EVENING STAR.

As the committee of Common Council are now investigating the awarding of a contract for an engine at Roxborough Water Works, perhaps a constant reader may suggest a few questions, which would undoubtedly gratify our citizens to have answered. The contract for the Worthington engines, with boilers, pipes, etc., complete, for Newark, was $45,000 each.

The contract for the same size engines, without boilers, etc., at Belmont Water Works was $47,500 each.

The contract price for the proposed engine, same size, for Roxborough works, is given by the Chief Engineer of the Water Department as $55,000. Why this difference in cost?

What is the reason for the great haste in contracting for the Worthington engine, when the present engine at Roxborough is not working one-third of the time?

Why is an engine placed at the Roxborough reservoir to pump water down hill into the Germantown reservoir? The water flows from the former into the latter, but this was not discovered until lately.

Why did the city pay $50 per foot for laying pipe with a patent flexible joint across the Schuylkill river, besides two or three dollars a day for dredging and towing, when the same size pipe with the same patent joint, was dredged for, towed and laid across the Hackensack river, N. J., for $36 per foot, where the wind and tides made its laying more difficult?

Why should even $36 per foot be paid, when responsible parties were prepared to lay and guarantee a line of pipes for even less?

INQUIRER.

3

THE WORTHINGTON ENGI

CHIEF EN[illegible]EER GRAFF GIVES OUT A [illegible] FOR FI[illegible]IVE THOUSAND DOLLARS [illegible]UT RECEIV[illegible] BIDS—THE MATTER BEFORE AN INVESTIGAT[illegible] COMMITTEE—STATEMENT OF MR. GRAFF—FURTHER INVESTIGATION POSTPONED FOR THE PRESENT.

In consequence of the receipt of the following communication, Common Council, on Thursday last, appointed an investigating committee, consisting of Messrs. Mitchell (chairman), Allen, Bardsley, Bowker and Kendrick:—

To the Select and Common Councils of the City of Philadelphia.—Gentlemen:—On the 20th of September, 1870, we addressed communications to your honorable body, asking permission to offer bids for the new pumping-engines required in the enlargement of the Water Works of the city of Philadelphia. We find an ordinance approved the 17th of July, 1870, in which, among other items, makes an appropriation of $100,000 for an engine and pump for Roxborough Water Works. Since then we have not seen any further action of Councils; and the next information we have upon this matter is found in the report of the Chief Engineer, lately issued, in which he states that a contract has been awarded to Mr. Worthinhton, of New York, for his engine, briefly alluded to (see page 12 of report presented to Councils for 1871). We, as manufacturers and tax p[illegible] of this city, respectfully request the appointment of a committee to investigate the manner in which this contract is alleged to have been made, believing it will be found to be in direct violation of the Act of Consolidation, section 27, approved May 13, 1856, and contrary to [illegible] usages of the department.

WILLIAM M. HENDERSON,
Residence 3843 Bridge street.
NORRIS IRON COMPANY,
T. T. WOODRUFF, President,
Office, 1345 Buttonwood street.

MARCH 22, 1871.

The above-mentioned committee met at noon yesterday in the office of the Clerks of Councils, Fifth and Chestnut streets. Mr. Mitchell occupied the chair.

Mr. Graff, Chief Engineer of the Water Department, was present, and made the following statement:—

The contract for the Worthington duplex engine for Roxborough Works was authorized by the Committee on Water, September 6, 1870. The price to be paid is $55,000, which includes foundations and everything necessary for immediate work, except the mains supplying water to the pumps and those from the pump to the reservoir. The communication of Mr. Henderson was dated September 20, 1870, and the Norris Iron Company September 22, 1870; or fourteen and sixteen days after the contract had been authorized to be made by the Committee on Water. No bids were asked from any one for the engine, except Mr. Worthington, for the simple reason that no other person has a right to construct such an engine, it being covered by patents. It would, therefore, have been an absurdity to ask the Norris Iron Company or any other works to give us a bid for what they dare not build. This particular form of engine was selected by me for the reason that, after fourteen or fifteen years experience in pumping engines, I considered it the best suited, in every way, for our use, and with the firm conviction that the city should procure the best article possible for its purpose, no matter where obtained. Mr. Worthington satisfied the Committee on Water that he expended in this city, for materials purchased of Morris, Tasker & Co., Sellers & Co., Bement & Dougherty, and others, $75,000 and over per annum for several years. I learn that the Morris Iron Company have manufactured engines for the water-works of Erie, Pennsylvania. If the principle they advocate in their communication is correct, how much to blame the city of Erie must be to send work so far from their own city. It is a bad rule which will not work both ways.

[illegible] Graff was the only witness present. [illegible] presence of other gentlemen, who had [illegible]ted to attend, the committee [illegible] Monday next.

4

The Prefect of Police of Paris has daily to provide for the paving, macadamizing, sweeping, watering, and lighting of 1,474 streets, avenues, quays, and boulevards, forming a total length of 384,665 metres, and presenting a surface of 5,500,000 square metres. There are in the streets 13,000 gas burners, which are lighted in the course of about twenty minutes. The length of the gas pipes is 485,000 metres; that of the water conducts 330,000 metres; and that of the sewers 163,000. The city contains between 32,000 and 33,000 houses, of which 6,863 are lodging houses—that is, inhabited by a population requiring a special surveillance. About 137,000 persons circulate daily in carriages; the omnibuses alone transport 25,000,000 persons per annum; and yet there only occurred last year 380 accidents, of which only twenty-four proved fatal. Every year the population of Paris consumes 80,000,000 kilogrammes of meat, 970,000 hectolitres of wine, 240,000 hectolitres of beer, and 78,000 hectolitres of brandy and liqueurs. The police has to verify the good quality of all

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5

END OF THE PUMP CONTROVERSY.—The contest in the City Councils upon the Water Works question has ended in accordance with common sense. The Chief Engineer recommends the Worthington pumps as the best. The opposition—to wit, the members of a firm in this city, which could not build that pump because it was a patented article—has endeavored to compel the City to have no other pump made but such as they could build. After a long battle, which was distinguished by the allegation that it would be for the interest of the city rather to take an inferior article built here than a better one built elsewhere, common sense has prevailed. Last week the ordinance authorizing a contract for the Worthington pump was passed by both Councils, with the *proviso* "that the said work upon the engines shall, as far as practicable, be done in Philadelphia." This sop to Cerberus means nothing. If Henry Worthington is to do the work, he will have it done where it will best suit his own convenience.

The result is due, we think, to the sober second thought of the citizens. Of course it would be very unjust to take this work away from Philadelphia if it could be done here. But our interest is to get the best, wherever it is to be had. If the policy sought to be sustained by the parties clamoring that this work should not go out of the city were enforced against Philadelphia mechanics by the inhabitants of other places, Philadelphia mechanics would very often be in want of jobs. "Live and let live" is the proper motto for cities as well as for men.

6

[illegible]N DOORS TO CORRESPONDENTS.

The Worthington Contract.

ED. PHILADA. INQUIRER:—The proceedings of the Special Committee appointed by Common Council to examine into the facts of the Chief Engineer of the Water Department giving a contract to parties in New York, without advertising for bids, has been read with interest. It may be considered doubtful, however, if any beneficial results will arise from its action. Without reflecting upon any member of the committee, the citizens may take exception to several matters taken for granted by them.

First. It is claimed that the works of one of the petitioners is located at Norristown, and hence cannot benefit the city. The letter of these parties stated they were *citizens* and *tax-payers of Philadelphia*; this exhibits their right to claim consideration from Councils.

Second. The law authorizing all contracts to be made by advertisement and bids, was undoubtedly framed to protect the city's interest, and was meant to cover all ground. The committee took the position that it referred only to repairs and renewals. A nice distinction may arise as to what may be considered repairs and renewals. At all events, a bad precedent is established, whereby we may have all the work required for our various departments awarded by favoritism, without advertisements and bids.

Three. The chief engineer of the Water Department accused a manufacturer of infringing upon the patent of another. Officials are not placed in position to be the champions of patentees. The question of infringement lies between the manufacturers; and the United States officers, not our Councils, are to decide the matter of patent rights.

Fourth, The committee assumed that the Worthingon engine was the most efficient, upon Mr. Graff's testimony. If it really is so, why has not the test so often asked for by our newspapers and citizens been made. No better vindication of the whole matter could be had than that these engines, after a fair test, should come up to the value claimed for them.

A year or more since this subject was agitated, about an engine constructed by the same manufacturer, because he was awarded the contract for a sum largely in excess of the offer of Philadelphia firms.

If the manufacturer, the Chief Engineer and Councils are satisfied that this engine is better than any other, they can surely afford a fair trial of its merits.

Dodging the question does no good; it places all the parties under an imputation of dishonesty, and destroys the confidence the people should feel in their officials.

The question of the right of the Water Committee to make contracts should be settled by legal decision, or by Councils; and the committee acted unfairly in placing a witness, who is a mechanic, in a position which forced him either to decide the question or admit that he had no right to expect the privilege of bidding.

Our city authorities should act fairly in these matters, and even if the law does not require advertisements and bids, it would undoubtedly be to our advantage to have them. As some citizens feel they are wronged, such action would show that those in authority want to encourage [illegible] own manufactures, and that they do not discriminate against Philadelphia mechanics.

FAIR PLAY.

7

☞ TO THE REPUBLICAN VOTERS OF THE SECOND SENATORIAL DISTRICT.

Examine the record of A. WILSON HENSZEY (member of Common Council), on awarding the contract to a New York machinist for the building of the engines for the Twenty-fourth Ward Water Works.

HE VOTED in the Committee on Water, AND USED HIS INFLUENCE TO GIVE THE CONTRACT TO THE NEW YORK FIRM for the building of said engines, AT A COST EXCEEDING $32,000 MORE THAN THE WELL-KNOWN FIRM of Messrs. Merrick and Sons OF THIS CITY OFFERED TO FURNISH ONE FOR; giving security that the same should be satisfactory in every respect.

The following I clip from a New York journal, which speaks for itself:

"New York takes the lead, of course. A well-known citizen thereof has just been awarded by the Council of Philadelphia a contract to construct a set of pumping machinery for that city. Bids were received from several Philadelphia mechanics, but New York won the palm, though his price exceeded by some thirty thousand dollars those of his competitors."—*New York World.*

Mr. HENSZEY is now a candidate for the Senatorial nomination of the Second District before the Republican Convention, and asks the support of the Mechanics of the District. HOW CAN THEY SUPPORT HIM?

1t§ MECHANIC.

8

THERE are some jokes that are no jokes at all. In that little story that Æsop tells about the boys and the frogs the matter of throwing stones was certainly no joke to the frogs, however it may have appeared to the boys, and the tax-payers of Philadelphia will scarcely appreciate the facetiousness of Mr. Shermer's remark yesterday at the meeting of the Water Committee, that it would be well not to make the commission to test the Worthington pumps too large, as all the members would have to be paid. This jest of Mr. Shermer was responded to by Mr. Davis, who in the most jocular mood imaginable suggested that $25,000 be appropriated, whereupon, according to the reporters, there was laughter. All this may have been very funny to the gentlemen named and their fellows on the committee, but it does not appear to us in that light, for too much suspicion has already been excited with regard to the management of the Water Department for those who have to foot the bills to look with complacency upon the process of playing ducks and drakes with their money, or to consider the suggestion that certain men are to be bought up as a jest that is entirely too likely to be a stern reality to be at all amusing.

9

HOT WATER VS. COLD.

Chief Engineer Graeff will soon be [illegible] accustomed to hot water as he is to cold, and it is a curious fact, while our citizens not unfrequently get out of the latter, he is constantly getting into the former. A Mr. William M. Henderson charges him now with having made a $100,000 contract with a New York firm for some machinery, in direct violation of section 27 of the act of consolidation, and contrary to the usages of the department, and Councils have been so much impressed with the importance of the charge that it has been a subject of investigation by a special committee. From the report of the proceedings of that committee, as published, we are unable to glean any other information than that the contract was awarded to New York mechanics, and without the opportunity for Philadelphia's skilled workmen to compete. For this action there can be no satisfactory excuse offered, and as it is not the first time the Chief has gone abroad for machinery that could have been supplied just as well at home, our mechanics are very naturally indignant, and desirous of knowing why the invidious distinction is made. With such experience, [illegible] strange that there is so much c[illegible]int about our municipal departments?

BROAD STREET.

andy [illegible] Ap 91

10

THE WATER SUPPLY.

The action of the Democratic members of City Councils yesterday offers a fine example of the liberality and public spirit of those gentlemen. It will be remembered that the committee appointed some time since to consider the subjects of the city water supply and the park extension, reported in favor of a loan for the purpose of carrying on those highly important works. As is usually the case in considering measures of such magnitude, a caucus or private understanding was had among members to learn the chances of success of the proposed loan. The Democrats, upon that occasion, unanimously promised to sustain the loan. When, however, the matter came up for action yesterday, they, almost to a man, forsook their pledges. In Common Council the necessary two-thirds vote was obtained, but in Select Council the bill was defeated, every Democrat in the Chamber except Col. Page, who deserves the thanks of citizens for his honesty, voting against it. The reason given for this dishonorable, and, in view of the urgent nature of the case, this criminal action, is not the least singular part of the affair. It was openly stated that the opposition intended to keep any disposal of patronage out of the hands of the Republicans until after the Fall elections. The works contemplated for the sorely needed increase of water and for extending and improving the Park would require a force of laborers, who would be certain to vote the Republican ticket! Anything so contemptible and selfish as this can hardly be matched in our entire local history. It seems, then, that to satisfy this precious body of upright politicians our hydrants are to run dry, or what is worse, perhaps, are to bring to us the every day aggravated corruptions of the Schuylkill. In many parts of the city there are hours of the day when not a drop of water is procurable. Again, extensive improvements have been commenced at Fairmount, which can only be carried on by the creation of this loan. The necessity of the park extension is not as vital as that of the water supply; still it is a matter of the utmost importance. In short, the rights of the whole case must be clear to citizens of all parties. It does seem incredible that a body of popular representatives could act in a manner so diametrically opposed not only to the wishes, but to the very health and comfort of their constituencies.

11

CITY BULLETIN.

[illegible]elect Council held a special meeting [illegible]es[illegible]y afternoon, to consider the Water Loan which had been vetoed by the Mayor.

[illegible]he following communication from the Chief Engineer of the Water Works was read:

PHILADELPHIA, Sept. 5, 1871.—*To the President and Members of Select Council*—GENTLEMEN: Finding that there are some erroneous impressions upon the mind of the public in regard to several points of the appropriation recently asked for, upon the loan granted by your honorable body, June 29, 1871, I take the liberty of occupying your time for a few moments for the purpose of correcting some of them.

It has been charged that the size and location of the large reservoir upon the East Park is so "indeterminate" that it may be placed anywhere "within the space of about ten miles, which the Chief Engineer may elect," and the impression has been conveyed by such assertions that the department is asking Councils to appropriate money for an object for which they have no fixed plans, no estimates, and not even a situation determined.

To disabuse the minds of any who have been led to entertain such opinions, permit me to direct your attention to the journal of Select Council, vol. 1, 1871, page 80 of the journal, and page 31 of the appendix thereto, from which record it will be found that upon the request of the Park Commission, the Committee on Water reported a resolution, and *presented a map* showing fully the size and location of the proposed reservoir. This map, with the accompanying resolution, was sent to the Park Commission, and that body approved the situation and shape of the reservoir, and ordered it to be engraved upon the map accompanying their last annual report. This was done, and the shape, size, and exact position of the embankment is printed in fine dotted lines upon the map referred to.

Every preparatory step usual with such work has been taken; many test pits have been dug over the area of ground; that the kind of material we are likely to find may be accurately ascertained, the ground has been carefully contour levelled, mapped, and the cubic contents of the soil to be moved closely determined; from this data, and the experience of doing such work had by the Chief Engineer in the erection of several successful reservoirs, the estimates have been made; they have been before the Committee on Water, but the details of them have not been put before Councils, for the reason that it is usual for all deliberative bodies to leave the minute details of a subject to its sub-committees, whose duty it is to report to the larger body the gross result of such details.

The peculiarities of the work require oral explanations, which, accompanied by illustrative wooden models, have been placed before the Committee on Water, but, of course, cannot be submitted to Councils without such oral explanations. A mere array of quantities and figures conveys a very inadequate and unsatisfactory conception of the work to be done and the manner of doing it. It has been charged that the appropriation has not been properly itemized. In answer to this, I have to say that the items have been made up in the manner usual with all the departments since the consolidation, and, it is believed, in accordance with the act of Assembly of May 13, 1856.

The items have been approved by the Committee on Water, and have been more than once submitted to and approved by the Committee on Finance; because the amount in one item is perhaps unusually large, is, I conceive, no reason for a departure from the usual method of itemizing all city appropriations.

to give my reasons, and only applying them as general principles, not intending invidious application to any one for objecting to the bill.

By the way, your note informs me that the Park Commission have located the proposed storage reservoir on the East Park, and in their map have, with the approval of Councils, designated its situation, but I find nothing upon the record of the proceedings of Councils defining its exact position other than by reference to the Park Commission map, and on examination of the one which accompanies your note, I find it marked, but neither size nor form is indicated. However, this feature was but one of several objections to the bill, which I was obliged to make.

A more careful perusal of the veto message must, I am sure, relieve you of some of the thoughts or doubts which you seem to entertain as to its application to yourself; its argument is upon the gross error of an indefinite appropriation, nearly two millions of dollars, without specifying the items and purposes of expenditure in such manner as will accomplish the check which our laws intend shall be put upon public expenditures; and I desire to present or point out the evil influences which might be made of such legislation, expressly withdrawing yourself from imputation in doing so. I feel that I should have been derelict in my duty if personal regard or confidenc[illegible]uld make me approve a bill whose princi[illegible] [illegible]tails were, in my judgment, alike a[illegible] [illegible]e public interests.

12

AND DAILY TRANSCRIPT.

Philadelphia, Thursday, June 18, 1868.

PERSONS leaving the city during the summer can have the Ledger mailed to their address by ordering the same at this office. Terms, thirteen cents per week, or fifty cents per month.

COMMON SENSE OF THE WORTHINGTON PUMP CONTROVERSY.

There is a matter now before Councils for consideration, that is being discussed in a spirit that will hardly do credit to the city, or advance the interests of its extensive manufacturing establishments, although the latter is one of the chief objects of one party to the controversy. It appears that a new pumping engine is required for the Twenty-fourth Ward Water Works, and the Chief Engineer and the Water Committee of Councils have come to the conclusion that the "Worthington Pump" is altogether the best one to procure, both in point of efficiency and economy of working expenses. This engine, however, cannot be procured in Philadelphia, and great opposition has been excited because Philadelphia is going to another city to procure machinery. Now it is, of course, sound policy always to prefer home manufactures over all others, if the conditions of the case are anything like equal, or unless there is sound and strong reason for going elsewhere to procure the best article of the kind wanted. Most thinking men act on this principle where business matters are concerned. But to reject a really superior and valuable article simply because it is made elsewhere is not wise, and scarcely any business man ever acts on such an idea. People from all parts of the United States, and from many foreign countries, send to Philadelphia for our superior locomotives, sugar-house machinery, marine boilers and engines, gas fixtures and chandeliers, ornamental iron railings, wrought iron and lead tubing, standard scale-beams, domestic woollen and cotton goods, chemicals, cosmetics, furniture, carriages, and thousands of other articles, although some of them may be procurable at home. But they prefer ours because of some indisputable superiority.

If all such persons should act on the narrow and short-sighted policy brought to bear in this "pump" case, what would become of some of our great staple manufacturers? But people do not govern their business in any such way, nor has such policy been heretofore adopted by the city. Within the memory of the present generation, Philadelphia was the great centre for the building of superior hand fire engines, and they were sent from this city to all parts of the country. How is it now since the *steam* fire engine has come into use? When our firemen want the best machine in use, do they refuse to take it because not built in Philadelphia? The answer will be found in the machines in our fire engine houses, very few of which are of Philadelphia make? This is not because they prefer machines built in other places, but because they want the best within their reach. When newspaper publishers want the fastest and most desirable printing machinery, they do not reject "Hoe's" because they are manufactured in New York, but go there for their printing machinery simply because they want the best that can be got, and until very recently could not get it anywhere else. This all comes about from the same causes that bring people to Philadelphia to buy all the large number of superior articles we manufacture, in preference to those they can get at home.

13

The Contract for Pumping Machinery.

ED. PHILADA. INQUIRER:—I see by the INQUIRER of the 4th inst. that the Philadelphia Water Department is about contracting for pumping machinery. Also, that a Philadelphia firm proposes to do the work for $30,000 less than the Chief Engineer proposes to pay a New York firm for the same work. Would it not be well, in view of the city finances, for the "City Fathers" to look around and see if some of the modern improvements in pumping machinery will not accomplish the same amount of work with a great deal less expenditure of money than is proposed in the above case? I do not know what sized pump and pumping engine are proposed to be put up, but I am informed by a reliable firm in Schuylkill county, who have been engaged the past two years in introducing new pumping machinery in the mines, that they can furnish a pumping machine, with boilers and everything complete, that will force *two-and-a-half millions gallons of water* every twenty-four hours, against a head of two hundred feet, for about $18,000 or $20,000, and would guarantee the satisfactory performance of the above duty with nearly if not quite as economical results in consumption of fuel as the Cornish engine would produce. Should one of those machines not be sufficient to pump the quantity required, two or more could be placed side by side and used as occasion would require. Another great saving to the city would be in foundations, as those pumps do not require any fastenings, and all that would be required would be a sold place to set them on. It may be thought by those who have been in the habit of making appropriations by the hundred thousands for like purposes, that it is all nonsense to talk about putting up reliable machinery for the figures named; but if they were to visit Schuylkill county and see the quantity of water pumped from the mines under the greatest difficulties, I think they would come to the conclusion that some things can be done as well as others. Not wishing to intrude further upon your valuable space and time, but hoping some of those in authority may give this matter their serious consideration,

I remain respectfully yours, &c.,

ECONOMY

Philadelphia, June 5, 1868.

155

As a fitting pendant to the estimates of the commissioners we clip from the New York *Sun* of yesterday the following comparative statement showing the increase in the assessed value of property in the three wards surrounding the Central Park in the last twelve years:

Ward.	1856.	1862.	1867.
Twelfth	$8,149,860	$13,100,385	$24,940,737
Nineteenth	8 041,183	17,903,137	46,244,340
Twenty-second	10,239,022	18 041,857	30,915,240
Total	$26,429,565	$49,045,370	$102,105,317
			26,429,567
Increase from 1856 to 1867			$75,675,750

The increased valuation above stated gives an increased tax for the year 1867 of $2,020,542.53. Deduct from this the annual interest on the cost of the land and improvement of the Park, $608,855,58, and the excess of increased tax in these lands over interest and cost of land and improvements, and it leaves $1,411,686.95, and demonstrates the fact that a generous, well appointed Park acts not only as lungs to a city, but will pay for itself.

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"Star" Nov 21.1870

BELMONT PUMPING ENGINE.

WHAT A MACHINIST HAS TO SAY.

Editor EVENING STAR.

I am informed upon good authority that at the recommendation of Mr. Graff, the city has paid in full the contract price for the Patent Duplex Engine now in operation at the Belmont Water Works.

As a citizen and tax-payer, and proprietor of a machine shop, I joined with others in asking, by means of the daily papers, that a fair and honest trial be made of his engine, by disinterested and capable men, before the city paid for or allowed the further prosecution of the contract.

This was done because we believed that the superiority claimed for these engines could not be realized. This belief is sustained by the best scientific journals, where the principles upon which this peculiar form of pumping engine is constructed, have been carefully analyzed, and the impossibility of high duty or economy in operation demonstrated.

It should be remembered that our City Councils were induced to adopt and purchase this peculiar form of patent compound duplex direct-acting pumping engine, by the recommendation of Mr. Graff, in his report to them, urging the contract with Mr. Worthington, dated May 26, 1868; that Mr. Graff refused the bids of Philadelphia mechanics, and recommended giving the contract to Worthington of New York for $95.000 for two engines (double the value of the machinery), although a Philadelphia firm (Merrick's) offered for $57,000 to construct two engines, guaranteed to do the same work with as little coal as asked from these patent machines.

Will a fair test be made? We have a right to demand it. Or must we suffer the loss of character as machinists, and see this wrong inflicted without the power of obtaining redress. The selection of New York pumping engines for the Philadelphia Water Works has been thoroughly advertised throughout the country, and has already resulted in great detriment to the reputation of Philadelphia. We challenge the test so often asked for. HAMMER.

2

"FIGHTING BOB" IN TROUBLE.—Mr. Robert M. Evans (*alias* "fighting Bob"), Inspector of Coal Oil, is in trouble. Earnest efforts are being made to effect his removal from office. Several of his deputies, or assistants, have made affidavit before Alderman Carpenter to the effect that Mr. Evans has been in the regular habit of hiring out, for a liberal consideration, his stencils to the oil refiners; and that the latter have been permitted to sell oil regardless of the terms of the law providing for its inspection. One of the gentlemen who thus testify against Mr. Evans is a certain Captain Brooke, who was appointed a deputy inspector at the personal request of the Governor, who, before appointing Evans, it is said, required a written promise from that gentleman that he would appoint Brooke. Another witness against Evans is a gentleman named Pidgeon. A petition for the removal of Mr. Evans has been signed by the Republican candidates for the State Senate (Messrs. Connell and Henzsey), and by all the Republican candidates for Representatives except Messrs. Davis and Clark. The removal of Mr. Evans appears to be very probable. Considering that he was the means of having the law passed providing for the appointment of an oil inspector, and then secured the appointment for himself, it seems hard that he should so soon have come to grief. Mr. Evans might appropriate to his own use the affecting and well-known epitaph on a very young infant—

"Since so early I was done for,
I wonder what I was begun for!"

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CITY AFFAIRS.

THE SCHUYLKILL NAVIGATION COMPANY.—The annual meeting of the Schuylkill Navigation Company was held yesterday at their office, No. 417 Walnut street, Mr. Frederick Fraley, president, in the chair. The annual report was read, showing that the total tonnage carried was 982,739 tons; coal tonnage, 698,879; miscellaneous articles, 283,860. The coal tonnage was 284,681 tons less than that of 1868; the miscellaneous tonnage 4167 tons more than that of 1868.

The income during the year from tolls was,	$831,142 01
Rents of real estate and office,	50,599 40
Tolls on Union Canal trade,	8,806 19
Interest,	1,758 85
Balance due by Philadelphia and Reading Railroad on settlement of accounts under agreement of 1864,	4,159 45
Total,	$896,465 90
The current expenses of the year were,	$263,813 35
Divided as follows:	
Car and landing expenses,	70,128 58
Drawbacks on coal trade and allowances for boats,	152,400 04
Towing boats,	13,282 43
Union Canal Company, for its share of tolls,	1,617 11
Total,	$449,365 51

Balance applicable to the payment of interest and sinking fund, $447,100 39.

Interest payable on notes, bonds and loans of the company, $444,027 30.

Surplus beyond payment of interest and expenses, $3073 59.

In reference to the drought the report says: "In the latter part of July and the beginning of August, owing to the low stage of water in the Schuylkill, not at all unusual at that season, we found it necessary to call upon the city of Philadelphia for compliance with the terms of the contract under which it has the right to use the water power of the dam at Fairmount for pumping water into its reservoirs.

"Our requests were partially complied with, and the navigation was not very materially interfered with until the 11th of August, when the agents of the city positively refused to close the inlets to the water power, and also drew down the water in the dam to a point that rendered it impossible for loaded boats to pass. On the 14th of August the steam pump and machinery owned by the city was so much impaired that it could not be relied on for its usual supply to the reservoirs. The city was in great peril on the one hand from a threatened famine for want of water, and on the other in danger of destruction of property by a destructive conflagration.

"Its agents had done, under the plea of great necessity, what effectually interfered with and stopped navigation below Manayunk. We were powerless to close its watergates by force, and upon its agents assuming the responsibility, and promising, so far as they could, indemnity, we yielded to what was considered a temporary necessity, and made every effort to remove that necessity as speedily as possible.

"Although every effort has been made to perfect an amicable settlement of damages, we have been compelled to apply to the courts for the arbitration of our claims upon the city."

The following officers were elected to serve for the year 1870: President, Frederick Fraley; managers, Joseph B. Townsend, John N. Hutchinson, George Brooke, Charles W. Wharton, Thomas T. Lea, Charles Baber, of Pottsville; treasurer, Charles W. Bacon; secretary, William M. Tilghman.

☞ **DEPARTMENT FOR SUPPLYING THE CITY WITH WATER, CHIEF ENGINEER'S OFFICE, NO. 104 SOUTH FIFTH STREET,**
PHILADELPHIA, August 12, 1869.

The long continued drought and consequent unprecedented low stage of water in the Schuylkill, makes it difficult, with the present machinery, to keep up an adequate supply of water in the reservoirs. Citizens are, therefore, earnestly requested to abstain from the waste of water in any form whatever.

It is particularly desired that no use will be made of the wash-pavement pipes, private fountains and other wasteful appliances whilst the present low stage of water exists.

It is believed that all good citizens will cheerfully comply with a request intended to conduce to their own safety and comfort.

FREDERICK GRAFF,
Chief Engineer Water Department.

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pipe at $11 30, $56,782; 22,960 feet twenty-inch at $8, $183,680; 19,830 feet sixteen-inch at $5 60, $111,048; 242,440 feet twelve-inch at $3 60, $872,734; 121,600 feet eight-inch at $2 20, $267,300; 36,200 feet six-inch at $1 70, $61,540; 1,106 hydrants, $45—$49,770; gates, $6,000. Total, $1,947,954.

The remaining expenses and cost of maintenance may be fairly reckoned to be the same as in the first district, or $182 per day, and yearly, $65,000. The total cost and maintenance of apparatus for flushing and fire purposes in all that portion of the City below Fifty-ninth-street may be summed up as follows: Cost of construction below Fourteenth-street, $1,782,985; between Fourteenth and Fifty-ninth streets, $1,947,554—total, $3,730,939; or in round numbers, $4,000,000. Cost of maintenance daily below Fourteenth-street, $182; between Fourteenth and Fifty-ninth streets, $182; total, $364. Cost of maintenance yearly below Fourteenth-street, $65,000; between Fourteenth and Fifty-ninth streets, $65,000; total, $130,000.

As there was some question how long cast-iron pipe would endure subject to the action of salt water, I have sent round to a number of sugar houses, whose pipes are in use for such purposes, to obtain their experience, and have inquired of others conversant with this matter, and find that the action of rust does not appear to be any more with salt water than with fresh water, and with the present practice of coating all cast-iron pipes with asphalt tar, the diameter of the pipes is a question of no moment. Under location of the pumping station in the upper district, it has been stated that the boilers located beneath the Reservoir could be used to supply steam to a supplementary pumping engine for the water service of Murray Hill, and in the small sketch given of the architectural feature for the support of the salt-water tank, it is intended that there should be a fresh-water tank beneath the salt one, of which no estimate of

continued from 153

6

THE EVENING STAR.
PHILADELPHIA, FRIDAY, JAN. 6.
PUBLISHED DAILY, EXCEPT SUNDAY,
BY SCHOOL & BLAKELY,
AT 30 SOUTH SEVENTH STREET.
☞ Circulation larger than any daily paper in Philadelphia, with a single exception.
☞ The only afternoon paper in the city that stereotypes and quadruples its pages.
☞ Advertisements on First and Fourth pages 15 cents per line, each insertion.

WATER METERS.—The citizens of Washington are complaining bitterly of the scarcity of water in some parts of that city. In reply to this complaint, the Chief Engineer asserts that the fault is not with the Engineer department, but with a certain class of persons who wilfully and wantonly waste the water, and assert that if there was proper economy exercised, there would be an ample sufficiency for all purposes. To prove the correctness of his position, he cites, through the Evening Star, some of the instances in which the water furnished to consumers is used not merely in a liberal but frequently in a most shamelessly extravagant manner. With a view to the correction of this abuse, a large number of water-meters are in process of manufacture, which, as soon as completed, will be put in use. These facts are suggestive, and deserve the consideration of the Water Department of Philadelphia. We annually expend enormous sums for the purpose of increasing the water supply of the city, and yet, in the face of these heavy outlays and enlarged facilities, there are certain seasons of the year when several sections of the city are without even enough water for domestic, let alone manufacturing, purposes. This, we feel confident, would not be the case were proper economy observed. There are families in which as much water—and most of it needlessly—is used every day as would be required for a twenty-horse steam engine, while there are others whose premises are just as cleanly, but on which not one-tenth as much is employed. Now both of these families pay like sums for the privilege of using the water, and yet one draws fully ten times as much as the other. This is unfair, and it is an unfairness that should be remedied. The charges for water should be regulated as are the charges for gas. Those who use most should pay most, or in other words, pay for what they consume and no more. If this system were introduced there would be fewer pave-washes permitted to run for hours at a time every day, and fewer sidewalks would be overflowed with water in summer and crusted over with ice in winter. Would it not be well to try the meter system?

THE new Legislature is said to be com-

THE ROXBOROUGH WATER-WORKS—The Common Council committee to investigate the Worthington engine affair will meet again on Monday. In making this contract Philadelphians were entirely ignored, having no opportunity of bidding for the work, which was given to Mr. Worthington, of New York.

Besides, the amount to be paid is too great. The pumping engine at Belmont, of the same size, cost only $47,000. At Newark, N. J., Mr. Worthington erected one of the same capacity, five million gallons, complete with steam boilers and all connections, for $45,000.

It seems singular, indeed, that we should go to New York to have work done for this, the manufacturing city of the United States, with mechanics of such skill and reputation in our midst. We hope the Committee will investigate the matter thoroughly, and that justice will be done.

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THE CROTON AQUEDUCT DEPARTMENT still continues to be managed in that judicious and economical manner which has marked it during the whole period since its organization. I am informed that the aqueduct is in good condition, and promises to continue to supply the City with wholesome water, without extensive repairs, for many years.

It is gratifying, in connection with this Department, to state that the annual receipts for water rents have the past year exceeded any previous one. 1857 yielded heretofore the largest amount, the receipts then being $697,370 51. In 1858, however, they have been about $730,000. This does not include the total water rents, for there are always every year an amount of arrears varying from $40,000 to $60,000, which are collected by the Finance Department.

The hydrographic survey of the Croton River, above the dam, which was commenced in 1857 by the Department, in order to ascertain the probable amount of supply on the water-shed of the Croton River, as well as for ascertaining suitable points for storage reservoirs for the surplus waters of the river, so that a full supply of water can always be furnished the City in favorable seasons as well as in periods of drought, has been continued during the past year, and completed. The result has been such as to well repay the expense of the survey, which will no doubt be of great use in extending the work when necessary. Lines amounting in length to 480 miles were run by parties engaged in surveying, and various sites for storage reservoirs were examined and important information obtained, which will undoubtedly be of great value in estimating hereafter the cost and capacity of each of them.

The length of the ridge-line forming the water-shed of the Croton River, beyond the point of the commencement of the aqueduct, has been ascertained to be 101 miles, and within the circuit of the valley there were found 31 natural lakes and ponds. The aggregate length of all the principal tributaries of the Croton is 136 miles, the length of the principal stream being 39 miles. The total area of the water-shed above the commencement of the aqueduct, has been found to be 352 square miles.

With this vast area—the numerous tributaries of the Croton, and the natural lakes and ponds—in the circuit of the valley found by this survey—it is evident that an abundant supply of water can, by the construction of the necessary additional works, be always afforded to the City even when densely populated to the full extent of the island.

The Department contemplate this year to commence an improvement to the High Bridge, so that a larger supply of water can be brought over it, necessary when the new reservoir shall be ready to be filled. The cost of this improvement to the bridge, it is estimated, will be $150,000.

The new reservoir was commenced the past year. The work is proceeding rapidly, and its cost, it is supposed, will not exceed the original estimate—$560,000. There will, however, be other work in the construction of gate-houses and sewers, which will cost together the additional sum of $350,000. The reservoir will contain, when completed, more than one thousand million gallons, and will be ample to supply a population largely exceeding that now embraced within the limits of the City. Some fears have been expressed in regard to the manner in which its outer embankment is being built, and apprehensions have

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key tax. This is scarcely an item of news, as we stated the same thing in these columns a month or two ago. We refer to it again because it is more and more apparent that the legislative schemes alluded to for affecting the whiskey market will be undertaken, apparently in the interest of the national revenue, but actually in the interest of a "ring," the most powerful and most corrupt that has ever bid defiance to law and justice. We find in a Kentucky paper of a few days since this item, in connection with the subject: "A mysterious movement among whiskey men is reported at Lexington. Large numbers of whiskey dealers from the West are buying up all the whiskey in that section.' In one warehouse on Saturday two thousand barrels were inspected. The partial failure of the corn crop in some sections of the West has sent a swarm of speculators to the locality named." This bit of news is significant. The failure of the corn crop is not the explanation of its drift. What it really means is, that the whiskey-kings are monopolizing the market, so that they can make the increased tax a pretext for running prices to an enormous figure this winter. They are powerful, but there are still some honest men in Congress, and possibly the nice little game will fail of accomplishment.

THERE is something wrong in the system of mining pursued here, and in Europe. This is evident from the recent terrible ca-

9

MUNICIPAL LOANS AND WORKS.

Common Council have passed a resolution directing an ordinance to be duly published creating a loan of $1,640,000, for the further extension of the reservoirs, Water Works, building of new reservoirs, introduction of turbine wheels, laying of new water mains, building of culverts, construction of an additional ice boat, etc. The work to be provided for by this loan is indispensable to the progress of the city. At the Fairmount Water Works the old wheel-houses have been removed, and operations commenced to introduce new turbine wheels, in place of all the old breast wheels. They will require more space, and the houses will be roofed over at the same level with the house of the other turbines. It is, therefore, an expensive and troublesome task; but when finished, the Fairmount works will be equal to all the demands upon them, and as they use no fuel, and are moved by water power alone, this is a great advantage in relieving some of the other works that are moved by steam and consume a great deal of coal for fuel. Thus, the expenditure on these new turbines will save money in the annual budget of the city.

New water works are required for West Philadelphia, in consequence of the old establishment having been blocked up by the formation of a mud bank or island in the river directly in front of it. The reservoir for the same district is also to be finished, and main pipes and other work required at the new establishment to supply Manayunk, Roxborough and Germantown, must now be attended to. New water mains are very much needed to supply the wants of our rapidly expanding suburbs in all parts of the city. It will be impossible for the building trades of the city to carry forward their improvements much further without these outlays, and consequently those who oppose the loan simply ask that the building trades shall stand idle, houses become scarce and rents go up again. With the money to be obtained by this loan all the wants of West Philadelphia, Manayunk, Roxborough and Germantown in regard to hydrant water may be fully satisfied during the current season, and thus an end be put to the great complaints from those quarters. These improvements will also enable the Kensington reservoir to meet all demands upon it; by keeping it always supplied from Fairmount with water much purer and better than that obtained from the Delaware works. To the great northwestern districts these improvements insure an unfailing supply.

From the proceeds of the new loan must also be paid the $75,000 interest upon the League Island purchase, a claim that seems to have been unavoidable, as well as the cost of building the new ice-boat, respecting which we have heretofore spoken at length, and the $800,000 recently appropriated to defray the cost of culverting Cohocksink creek, Mill creek and other streams. Mill creek is quite as formidable an obstacle in West Philadelphia as Cohocksink creek is in Kensington and Penn Districts. The work ought to have been done , and our only surprise is that the Board of Health have not presented both those filthy streams as public nuisances, since they undoubtedly are such, and of the worst kind, too.

An ordinance has been reported by the Committee on Gas and, referred to the Finance Committee, to authorize another loan of a million of dollars for the extension of the Gas Works. We have given full statistics exhibiting the absolute necessity for this work. We have no knowledge of the views of the committee in reference to the enlargement, but the last annual report of the department clearly pointed out what was required, and we presume that the improvements will be made in compliance therewith. Mains of greater capacity are demanded in all parts of the city, the present mains being totally inadequate to pass the quantity of gas supplied by the works. More and greater gas holders are required for the storage of gas, and increased power for pumping it at the relay stations. →

Nominally these loans will largely increase the city debt, but in reality the Gas and Water Departments pay all the interest on these loans, and they are no burden upon the taxpayers. If the same principle could be applied to some other departments of the city government so as to make them self-sustaining, a great deal of the present opposition to loans for public works might be obviated, and our progress be much accelerated.

10

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The Latest in Photography.—Photoglyphic Engraving.

Mr. Fox Talbot, the inventor of the well known "paper process" of photography, and who, with a liberality seldom found, relinquished his patent (being a wealthy man), and threw his improvements open to the world, has just been inventing a new process of engraving by light on plates of copper, steel, or zinc. Taking a perfectly clean plate, he covers it with a solution of a quarter of an ounce of gelatine dissolved in eight or ten ounces of water, mixed with one ounce of a saturated solution of bi-chromate of potash in water. The engraving process should be carried on in a darkened room, and is performed as follows:—

A little of this prepared gelatine is poured on the plate to be engraved, which is then held vertical, and the superfluous fluid allowed to drain off at one corner of the plate. The plate is dried over a spirit lamp, and the gelatine left in a thin film evenly spread over it. The object to be engraved is laid on this, and screwed down upon it in a photographic copying frame. This frame is then placed in the sunshine for one or more minutes. When the frame is taken from the light, and the object removed from the plate, a faint image is seen upon it—the yellow color of the gelatine having turned brown wherever the light has acted. Powdered gum copal is now spread thinly over the plate and melted into a thin covering, and the etching liquid applied. This liquid is the perchloride of iron, of which water dissolves an extraordinary quantity. This, of a certain strength (to be found by experience, five or six parts of the saturated solution to one or two of water being an average strength), is applied with a camels' hair brush, and the etching quickly commences, to be continued as long as the operator thinks fit. The liquid is then wiped off with cotton wool, the plate cleaned with water and whiting, and a perfect etching is obtained, the liquid acting only on those parts of the gelatine which have been left untouched by light. This liquid may be conveniently used for common etching, as it is, in every way, superior to aquafortis, and its preparation is simple, being merely a solution of peroxyd of iron in hydrochloric acid, evaporated nearly to dryness, and dissolved in water. It disengages no gas while "biting in," and does no injury to the hands or clothes of the operator. There are, of course, many points of difficulty in the process, which patience and experience on the part of the operator will easily overcome.

Section nineteen empowers the Commissioners to employ, equip, and pay a Park Police, adequate to maintain in good order, and to discharge them at pleasure, which police shall be subject to the orders of the Mayor upon any emergency.

Section twenty authorizes the Commissioners to license the laying down and the use for a term of years of such passenger railways as they think will comport with the use and enjoyment of said Park by the public. All emoluments to be paid into the City Treasury.

Section 21 fixes the rules and regulations:

1. No persons shall turn cattle, goats, swine or horses loose into the Park.
2. No persons shall carry firearms, or shoot birds in the Park, or within fifty yards thereof, or throw stones or other missiles therein.
3. No one shall cut, break, or in anywise injure or deface the trees, shrubs, plants, turf, or any of the buildings, fences, structures, or statuary, or foul any fountains or springs within the Park.
4. No person shall drive or ride therein at a rate exceeding seven miles an hour.
5. No one shall ride or drive therein upon any other than upon the avenues and roads.
6. No coach or vehicle used for hire shall stand upon any part of the Park for the purpose of hire, nor except in waiting for persons taken by it into the Park, unless in either case at points designated by the commission.
7. No wagon or vehicle of burden or traffic shall pass through the Park, except upon such road or avenue as shall be designated by the Park Commissioners for burden transportation.
8. No street railroad car shall come within the lines

12 cont on 157

NEW IRON AND NEW WORK.

Within less than eight years the whole track between Philadelphia and Baltimore has been relaid with various kinds of T iron, of both English and American manufacture. With a view of ascertaining the average durability of these various kinds, we have had every bar on the whole road examined by an experienced inspector. There is no question that the rails manufactured in England, in the early days of railroads, were the best that have ever been laid down, but as the demand on this side increased, and the price diminished by strong competition, the English iron rapidly degenerated, till finally many lots were sent here that were not worth the expense of laying down.

For two or three years we have laid down wholly American iron, either from the Montour works, or from the establishment of Reeves, Buck & Co., weighing fifty pounds per lineal yard, instead of iron of sixty and sixty-five pounds per yard, as formerly. We save in the material, and consequently in first cost, twenty or thirty per cent. The quality and the manufacture of the light iron is superior to the heavy iron, and thus a more uniform rail is secured. This iron has not been laid sufficiently long to enable us to estimate, with entire accuracy, its durability.

A fair estimate of the average durability of the iron, based upon the experience of this road, is ten years, or in other words, we must lay ten miles of new track annually to keep the road up in a state of entirely reliable efficiency. This will require about 800 tons of new iron, that can now be obtained in exchange for old at a difference of twenty dollars per ton. The average durability of cross-ties is about seven years. The track requires, if laid with light iron, about 35,000 cross-ties per year on our road, and if laid with heavy iron, about 30,500 per year. These are now bought at an average of 27½ cents each. The cost of relaying one mile of track is $400. Cost of spikes and joint fastenings, castings and switches, six hundred dollars.

The cost of these several items per year would be, at present prices, $36,450. The cost of labor in adjusting, ditching, inspecting track, together with all other items not enumerated above, will be about two hundred and fifty dollars per mile, or about $25,000 annually. An expenditure, therefore, in labor and materials, of $61,450 annually,

13

Bartol letter, cont. from 151

etc., and the lowest responsible bidder gets the contract. In this way we get the best at the lowest price, and the residence of the bidder is not regarded. Let the Committee on Water ignore all that has been done about pumping-machinery, and *advertise*, giving all the conditions that *must* be fulfilled. In this way we shall get machinery that will give a high rate of duty and at the lowest price. Since January 1, 1867, I have no interest in the machinery business. As a tax-payer I want Philadelphia to have the best machinery and at the lowest price that any good house here or elsewhere will build for. You have the same interest, and will, I hope, consider it a pleasure and a duty to frown down all side door contracts, and advocate that pumping machinery, like other city supplies, should be *advertised for*. Yours, truly,

B. H. BARTOL.

☞ **DEPARTMENT FOR SUPPLYING THE CITY WITH WATER.—CHIEF ENGINEER'S OFFICE, No. 104 South FIFTH St.**
PHILADELPHIA, Jan. 30 1868.

PROPOSALS FOR CAST-IRON SERVICE PIPE, IRON AND BRASS CASTINGS, LEAD AND GASKET.

SEALED PROPOSALS will be received at the Office of the Water Department, No. 104 South FIFTH Street, until TUESDAY, February 4, 1868, at 3½ o'clock P. M., for the following articles, delivered at such points in the city as the Chief Engineer may designate, free from Government tax:

First. Cast-iron Service Pipe, by the pound, as follows:

12,000 feet Pipes of four inches diameter.
48,000 feet Pipes of six inches diameter.

Prices are also asked for pipes from eight inches to twenty inches diameter, should any be wanted during the season.

Also, 65,000 pounds or more of Branches, Sleeves, &c., &c. All patterns to be furnished by the contractor, and to be approved by the Chief Engineer.

No allowance will be made for any metal in the pipes, branches, bends, &c., five per cent. above the specified weights

Second. 175,000 pounds of Iron Castings, for the workshop, for making of stops, plugs, &c., from patterns approved by the Chief Engineer, or furnished by the Department.

Third. 8 000 pounds of Brass Castings, for the workshop, for ferules, plugs, stops, &c., from patterns furnished by the Department,

Fourth. 55 000 pounds of Lead, for laying pipes.

Fifth. 2 000 pounds of Gasket, for laying pipes.

Plans and specifications can be seen at the Office of the Chief Engineer.

All pipes must be cast vertically.

All the pipes, branches, and curves are to be coated with coal-pitch varnish, in accordance with the memorandum to be had at the Office.

All pipes and castings shall be subjected to such tests and inspection as may be considered necessary by the Chief Engineer to insure a correct judgment of the quality of the material and workmanship.

No bid will be received except from persons manufacturing the articles bid for, and unless it be accompanied with a certificate that a bond of five hundred dollars has been deposited with the City Solicitor, as per ordinance of May 25, 1860.

The Committee reserve the right to accept or reject any or all of the bids.

No proposal will be received unless written upon the blank forms furnished by the Department.

FRED. GRAFF,
Chief Engineer Water Department.

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The Schuylkill Navigation Company.—The annual meeting of the stockholders of the Schuylkill Navigation Company was held yesterday, at 417 Walnut street. The report of the Board of Directors for 1869 sets forth that the total tonnage for the year was 982,739 tons. Of this amount, there were carried, of coal, 698,879 tons; of miscellaneous articles, 283,860 tons. The former was 284,681 tons less than for 1868, and the latter an increase over the same year of 4167 tons. Amount of receipts, $896,465 90. Of this amount, $8806 19 were from tolls of the Union Canal trade, and $831,142 01 from tolls of their own lines. The balance was received from various sources. The expenses reached the sum of $449,365 51. Of this amount, $1617 11 were paid to the Union Canal Company as its share of the tolls. The balance applicable to the payment of interest and to the sinking fund is $447,100 39. Amount of interest payable on notes, bonds and loans of the Company, $444,027 30. Surplus after the payment of expenses and interest, $3073 59.

With reference to the drouth of last summer, the report states that the city, by its agent, under the plea of necessity, had refused to comply with the terms of the contract by which they obtain the right to pump water into the reservoirs at Fairmonnt, and by drawing off the water, had effectually prevented the navigation of the Schuylkill below Manayunk, the water falling to so low a depth that loaded boats could not pass through the canal. The company, being powerless to close the water gates by force, submitted to and did all in its power to extinguish the necessity. The only commutation made by the city for the loss thus entailed was the appropriation of $25,000 for the relief of the boatmen. All efforts to come to an amicable arrangement of the claims of the company and boatmen with the city had failed, and they had been driven to the courts for redress, and suits against the city had been entered.

The following officers were then elected:

President, Frederick Fraley; Managers, Jos. B. Townsend, John N. Hutchinson, George Brooke, Charles W. Wharton, Thomas T. Lea, Charles Baber, of Pottsville; Treasurer, Chas. W. Bacon; Secretary, Wm. M. Tilghman.

2

THE WASTE OF WATER.

The thoughtless and unwarrantable waste of water upon the part of domestics and others is the cause of considerable annoyance to our citizens. At times when the full power of all our water works is insufficient to supply the demand it devolves upon the people, in every degree or station in life, to husband it and use no more than is absolutely required by their necessities.

The practice of deluging the sidewalks at all hours of the day and evening with volumes of water, under the plea of cleanliness, is entirely uncalled for, and amounts to a sinful waste.

To prevent this, an ordinance was passed sometime ago by Councils, providing that during the months in which this precious fluid is in greater demand, the sidewalks shall not be cleaned, save before seven o'clock in the morning and after seven in the evening. For a time it was observed and its provisions enforced, but of late a disposition has been evinced to commence again the old practice. As every law is not perfect, this one is evaded by attaching hose to fire plugs and hydrants, and under the pretence of watering the streets and sprinkling the trees, flooding the sidewalks as effectually as though for the avowed purpose of cleaning.

So universal has become this practice on the part of firemen and others, and so injurious to the health and comfort of our citizens does it threaten to become during the warm weather we are yet to experience, that the Chief Engineer of the Water Works, Frederick Graeff, Esq., has issued a circular remonstrating against the continuance of the practice, and requesting the Chief Engineer of the Fire Department to exert his influence and authority to stop it among the various fire companies under his control; and further states that in the progress of the improvements at Fairmount two of the old water wheels have been removed, and the one designed to supply their place has not yet been put in position, and he is fearful that unless this waste be stopped that the most serious consequences may ensue.

The possibility of the water becoming scarce or of an inferior quality is never contemplated when it can be obtained in abundance, but when the scarcity does arise, or it becomes odorous and distasteful, the complaints are loud and numerous; the officers of the water department are charged with incompetency, and the people wonder why so simple and easy a thing as supplying as much of the element as they may choose to use, is not done more effectually. Did they but take time to consider the matter they would be convinced that it is not so easy or simple as is generally believed, and that they themselves are as often to blame as the officers of the department. After being warned time and again, when they suffer the inconvenience caused by their own remissness, they cannot lay the burden upon the backs of others, but must bear it themselves.

With the thermometer among the nineties, the roofs of warehouses, dwellings, &c. scorched until they are almost as easily ignited as a tinder, should a conflagration break forth, and the supply of water fail, untold losses might be entailed upon our citizens; and yet, who can be blamed if the present extravagant use of water is allowed to continue.

Under these circumstances it is the duty of every citizen to confine his use of water, now almost as precious as drops of gold, to such quantities only as are absolutely necessary to preserve his health and cleanliness; and to so order his household, if he has any, that not a drop shall be wasted.

RECEPTION OF THE NEWS.

BELMONT PUMPING ENGINE.

WHAT A MACHINIST HAS TO SAY.

Editor Evening Star.

I am informed upon good authority that at the recommendation of Mr. Graff, the city has paid in full the contract price for the Patent Duplex Engine now in operation at the Belmont Water Works.

As a citizen and tax-payer, and proprietor of a machine shop, I joined with others in asking, by means of the daily papers, that a fair and honest trial be made of his engine, by disinterested and capable men, before the city paid for or allowed the further prosecution of the contract.

This was done because we believed that the superiority claimed for these engines could not be realized. This belief is sustained by the best scientific journals, where the principles upon which this peculiar form of pumping engine is constructed, have been carefully analyzed, and the impossibility of high duty or economy in operation demonstrated.

It should be remembered that our City Councils were induced to adopt and purchase this peculiar form of patent compound duplex direct-acting pumping engine, by the recommendation of Mr. Graff, in his report to them, urging the contract with Mr. Worthington, dated May 26, 1868; that Mr. Graff refused the bids of Philadelphia mechanics, and recommended giving the contract to Worthington of New York for $95,000 for two engines (double the value of the machinery), although a Philadelphia firm (Merrick's) offered for $57,000 to construct two engines, guaranteed to do the same work with as little coal as asked from these patent machines.

Will a fair test be made? We have a right to demand it. Or must we suffer the loss of character as machinists, and see this wrong inflicted without the power of obtaining redress. The selection of New York pumping engines for the Philadelphia Water Works has been thoroughly advertised throughout the country, and has already resulted in great detriment to the reputation of Philadelphia. We challenge the test so often asked for. Hammer.

The Water Main Contract.

3

To the Editor of The Evening Telegraph.

We notice in your paper of the 2d instant a letter from Messrs. Bushong & Brother to Frederick Graeff, Chief Engineer Philadelphia Water Department, in reference to contract for pipes, and also a brief editorial from you calling on Mr. Graeff for explanation. Messrs. Bushong & Brother publish the letter, they say, because Mr. Graeff returned it to them without reply. No one who reads the letter will have any difficulty in understanding why it was returned unanswered, nor do we see how either Mr. Graeff or the Water Board could take notice of such a communication. We were present at the opening of the bids, are acquainted with the facts, and think it right to correct the marvellous errors contained in Messrs. Bushongs' letter. They write that "the city loses some sixty thousand dollars by this rascality in awarding the contract." The bid of their friends amounted in all to only $42,903·85, certainly a difficult matter to save $60,000 out of this sum, and their bid was just $700·37 higher than the bids of the parties to whom the contract was awarded. In other words, the city saved this $700·37 by not giving the contract to Messrs. Mellert & Kinsey, and in fact could not have awarded it to them, as they were not the lowest bidders. It is a pity Messrs. Bushong & Brothers did not find out the facts before writing their letter. As it is, they will doubtless feel bound in honor to make a complete retraction.

S. Fulton & Co.

☞ We want to be just with the Schuylkill Navigation Company in the matter of its claim against the city. If it is true that the company never declared but a single dividend, and that was one summer when the directors turned out and mowed the tow-path and divided the hay, why, then, we approve of giving this claim consideration. It would be rather much to tell the directors to go to grass again, wouldn't it? Hey?

4

LEDGER AND TRANSCRIPT.

Philadelphia, Monday, Nov. 7, 1859.

LOCAL AFFAIRS.

The Supply of Water Down Town.—Workmen are now engaged in connecting the streets crossing Washington avenue with the great water main on Broad street. The main on Broad is 30 inches, to which is connected a 20 inch main running down Washington avenue to Tenth street, and from this point to Fifth street a 16-inch main. This main will be connected with the pipes now in the streets running north and south. At Fifth, Eighth and Eleventh streets there will be 10 inch outlets, and at the other streets six inch, except at Christian street, where a 10 inch outlet will be made. This entire work, as well as connecting the large main with the reservoir, will be completed this month, and then the inhabitants of the lower portion of the city will have as good a supply of water as the most favored portion of the city now has.

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6

CROTON AQUEDUCT DEPARTMENT.

The attention of the Croton Board was called some time ago to the great waste of water in New York City, and to which we alluded; they had the subject under consideration during several sessions, and after an examination of the uses to which water is applied in this city, the Croton Aqueduct Commissioners have estimated that there are thirty-five millions of gallons wasted daily. Many propositions were made to the Board—any or all of which might possibly result in checking this reckless waste—but they were nearly all of too expensive a character to justify their adoption. One suggestion (made in The American Gas Light Journal of August 3, 1868), was to have every householder or consumer of water supplied with meters similar to those used by the patrons of the gas companies; but it was estimated that this would require an expenditure of $4,500,000, and the experiment, which would have been effective, was not tried. The Board, however, resolved to make a practical effort to prevent the further waste of water, and they accordingly had notices, of which the following is a copy, served on every householder in this city:

"Croton Aqueduct Department, New York.

"To the Consumers of Water:—In consequence of the persistent, wasteful and extravagant use of water, and the reduction in the head of water caused thereby, the Croton Aqueduct Board deem it necessary to call the attention of all owners and occupants of buildings in which Croton water is used, to the existing ordinances and rules and regulations of this Department relative to the supply and use of water; and they announce their rigid determination to enforce their observance by the imposition, in all cases, of the specific penalties for their violation.

"Signed, Thomas Stephens, Robert Darragh, and George S. Greene."

This was doubtless the most judicious course the Board could pursue under the circumstances. It is gratifying to know that the Board is fully alive to the enormous waste of this precious health-giving element, and that they have taken the necessary measures for its prevention. But despite the waste adverted to, the future supplies will be equal to all the possible demands of the population of this city. With remarkable forethought, and a disposition to accomodate the millions who will reside on Manhattan Island, a plateau of water, twenty miles in length, has been secured for New York. It is capable of furnishing 336,000,000 gallons, and a portion of it is now used to add to the supply in the reservoir which is generally short in the dry season. The ground purchased to store this supply embraces about 300 acres, and is located near Boyd's Corner. It is about eight miles north of Lake Mahopac, and eleven miles east of West Point. We learn that workmen are engaged in building a stone dam to concentrate this new supply, and it will soon be completed. When these new water-facilities are in use, the supply will be sufficient for ten millions of people in this city. Sep 1868

The Chief Engineer and Councils are in duty bound to see that the advantages claimed for these engines, upon the representation of which the ordinance was passed, directing their purchase, should be fairly and openly proven before paying one penny of the city's money.

These advantages, as claimed by Mr. Graeff, in a report to Councils, (see Journal Select Council, 1868, Appendix, page 256,) are a duty 22 per cent. greater than the Cornish engines at West Philadelphia Works; 23 per cent. greater than the Cornish engine at Schuylkill works, and 61 per cent. greater than the engines at Delaware works. Also, a saving of $3 89 cents for each million gallons raised into the West Philadelphia reservoir, by using the New York duplex engines in place of the Philadelphia and Cornish engines at the West Philadelphia Works. Chisel.

10

THE WATER SUPPLY.

It may not be flattering to the conceit of a New Yorker to say that the Croton aqueduct, with its enormous cost, its great reservoirs for accumulation and distribution, its finished construction and massive masonry, by all of which a river has been checked in its course and distributed to rich and poor alike through all the ramifications of a great city, has failed to meet the object of its construction. Yet it is nevertheless true that there is but a limited supply of water, and that in most dwellings it is difficult to get water in the upper stories, and very many of them never have it there at all. For all sanitary purposes it is very defective. There is absolutely not water enough, and what there is has not sufficient head to supply the wants of the city—neither the luxuries of the rich nor the necessities of the poor. It cannot even be relied on as a guarantee against a general conflagration. The fault lies in the principle of its first construction. It is indeed an admirable copy of the splendid aqueducts of ancient Rome, which supplied that city with water in the days of the Cæsars. Yet that was before the age of steam; and although by the application of the simple principle of gravity water was accumulated and distributed throughout the imperial city, something more is required in our case than this. To get the water we require it should be elevated by the force of steam to a sufficient height and in sufficient quantities to supply the necessary demand. Its use for manufacturing purposes should be curtailed until domestic and sanitary necessities are satisfied. On Reservoir square, at present laid out as a pleasure ground, there should be constructed an elevated reservoir, into which, by the use of steam, water can be readily conveyed from the present reservoir, and thus acquire the necessary head which is essential to carry it to the upper stories of the houses. If more water is required than can be obtained from the Croton river, there are many other streams in Westchester county, much nearer the city, which with the aid of steam can be readily and quickly made available at a limited expense compared with the cost of the original works.

It is not simply in a hypercritical sense that I have endeavored to point out these evils and their remedy. The subject is one of the deepest importance involving the future prosperity and welfare of this metropolis, whose rapid increase in population and material wealth is a source of wonder and admiration. In its commercial activity—the exponent of American civilization—it bids fair to rival in civic beauty the other capitals of Europe. Yet, although so well adapted by nature for all the purposes of a commercial entrepôt, we have thus far failed to second the efforts of nature, but on the contrary have impeded them. Our beautiful Park and sculptured palaces of trade and industry seem like the ribbons and gewgaws with which depraved humanity seeks to hide the corruption that rankles beneath. We are neglecting the essential elements of permanent prosperity. Imperial Rome in the climax of her power owed to the *cloacæ* her municipal greatness; and Paris without her wonderful and perfect system of public works, instead of being the gay and

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BOSTON WATER WORKS.—NEW MAIN WATER PIPE of 40 INCHES DIAMETER.—Sealed Proposals will be received at the Office of the *Cochituate Water Board*, 119½ WASHINGTON Street, until July 31st, 1858, for furnishing cast iron WATER PIPES, of an Interior Diameter of forty inches, in sufficient quantities to make a length of twenty thousand (20,000) feet.

All the pipes are to be made from pig iron, from a cupola furnace, cast in a vertical position in dry sand moulds, and all of them to be made of iron of such a quality as will bear drilling and cutting, and they must be of uniform thickness.

The joints are all to be what is termed the spigot and faucet joint.

All the pipes are to be delivered on a wharf to be provided by the Water Board, convenient of access to loaded vessels, and it may be requisite to pass through three drawbridges to deliver them. If it should be required to pass through more than that number of drawbridges, such additional price as may be considered fair and reasonable will be paid.

Bidders must state whether their pipes are of a length of nine feet or of twelve feet, and proposals for pipes of each length will be considered.

The pipes to be of a thickness of one and one-eighth (1⅛) inches, and if of nine feet lengths each pipe will weigh about 4600 lbs, and if of twelve feet lengths each one will weigh about 6000 lbs. 7

As it is desirable that the pipes should be protected from corrosion, if possible, bids will also be considered for pipes coated internally with any material which it is thought will protect them from corrosion. Bidders are requested to name the price per ton for the pipes, and the additional price per ton for the coating, stating the kind of coating and its manner of application, and giving references to those persons by whom, and the places where the the coating has been used—also the length of time it has been in use, and the results.

A suitable number of sleeves will be required with the pipes. Twenty-five of the pipes to be cast with man-holes and covers, and ten of them to be branch pipes. The size and form of the covers (which must be fitted on by the contractors), and the curve or angle of the branches, will be given hereafter.

All the pipes, man-holes and branches will be subjected to a proof of 300 lbs. per square inch, to be made under the inspection of the City Engineer, or by some person appointed by him for that purpose, and the proof and inspection to be made either at the foundry or in the city of Boston, as the City Engineer may select.

Every pipe must have the initials of the maker's name cast upon it, and also a number signifying the order of its casting in point of date. The weight of each pipe to be conspicuously painted on the outside before delivery, with white lead paint.

A price per ton of 2240 lbs. is required.

Bids will be received for the whole, or any quantity not less than one thousand tons.

Successful bidders will be required to give bonds for the satisfactory execution of their contracts.

The delivery of the pipes may be commenced the ensuing autumn. The whole of them must be delivered by the first of August, 1859.

Monthly payments will be made in cash on all pipes which have been received and have passed the requisite proof and inspection. Ten per cent. of the total amount will be reserved until the fulfilment of the contract, as an additional guarantee for its faithful performance.

By order of the Water Board,
JOHN H. WILKINS, President.
JAMES SLADE, Chief Engineer and General
jy13tus6t Superintendent of the Water Works.

8

Trial of Steam Fire Engines at Boston.

Boston, August 31, 1858.

The trial of steam fire engines to-day on Boston Common was attended by thousands, including Governor Banks and other distinguished men. Four machines were present—the Philadelphia, from Philadelphia; the Elisha Smith, of East Boston; the Lawrence, from Lawrence, Mass.; and the New Era, of Boston. The Philadelphia made the first trial, as follows:—Filled a tank of twenty-six hundred gallons in eight minutes twenty-nine seconds, and threw a horizontal stream of one hundred and sixty-three feet, and a perpendicular one of one hundred and ten feet; raised steam in eleven minutes eight seconds. The length of the hose used by all was two hundred feet. The Elisha Smith filled the tank in eight minutes twenty-five seconds, and threw a horizontal stream of one hundred and forty feet, and a perpendicular one of one hundred and twenty-five feet; raised steam in thirteen minutes and fifty-one seconds. The Lawrence machine was withdrawn on account of breaking a small bolt, soon after firing up. The proceedings then were adjourned till half-past two o'clock.

The afternoon trials commenced with that of the New Era, of Boston, which resulted as follows:—Filled the tank in 7 min. 32½ sec.; played a horizontal stream 135 feet, and a perpendicular one 90 feet; raised steam in 18 min. 21 sec. The Lawrence then had a trial, resulting as follows:—Filled the tank in 8 min. 35 sec.; played a horizontal stream 154½ feet, and a perpendicular one 110 feet; raised steam in 10½ min. The Seneca Falls and Baltimore engines did not make their appearance, and another Boston engine was not present, being detained for repairs. The trials excited a great deal of interest, and were witnessed by throngs of people. The steam pressure at which they commenced working was 60 lbs., and was not allowed to exceed 120 lbs. while in operation. The prizes were $500 for the best, $300 for the second best, and $200 for the third best. The awards wil be made to-morrow.

After the single trials were over, all four had a grand trial, drafting and playing as long as their owners desired; and the opinion is freely expressed that the Philadelphia engine is the best, and will undoubtedly secure the first prize. Other trials will be had to-morrow, but not for prizes. The awards are the gift of the insurance companies of the city.

Our Supply of Water.

During the whole of the present month the water in the river Schuylkill has been unprecedentedly low, and is still decreasing in volume. Most of our readers who have been to Fairmount in that time must have remarked that there was no water running over the dam, so that the entire mass of the river water passes either into the canal or the water-works. As the canal gates let out some portion of the stream, and the water power by which Fairmount works are moved lets a still larger volume escape, the body of the river cannot fairly be said to be turned into our water pipes, although it is very nearly so. The exigencies of the Schuylkill Navigation (who claim the prior right to the water by the terms of their charter) require the stoppage of all the wheels at Fairmount for a portion of every day. At this season of the year the consumption of water by the city is enormous, and during the time the works are allowed to run their power is taxed to the utmost. Even with every effort used, it is difficult to keep up the supply.

Some of the reservoirs are now very low and not likely soon to be otherwise. The fact is not a pleasant one to chronicle, nor do we know of any way by which at present the deficiency can be remedied. Some time since we endeavored to draw public attention to the need of building extra reservoirs by which the vast floods of water wasted over the dam in spring, fall and winter might be economized to serve the wants of the city in summer. We now again call the attention of our readers to the subject, and ask all who feel an interest in the water supply to inspect for themselves the condition of the river and the reservoirs. In case of any great fire not so near the river as the last one, the want of water might be serious. We trust all will see the necessity of avoiding the waste of the fluid at this time. It is to the interest of every one to prevent it. 9

11

and will continue to be opposed until the end of time. When it was proposed, twenty-five years ago, to light our city with gas, the project was opposed by the most influential men in the city, among whom was our worthy friend Mr. Cresson, the present Engineer of the City Gas Works.

Mr. Campbell then read the following petition, which was sent to the Councils at that date, 1833, to which we found attached the names of some men well known in the political, as well as in the legal, walks of life. By the politeness of Mr. Campbell, we were permitted to obtain a copy of the petition, and lay it at full length before our readers, more on account of the peculiar objections it contains, and the monstrous results to be expected from lighting the city with gas, than the bearing it had upon the point under argument.

A REMONSTRANCE AGAINST LIGHTING WITH GAS.

Philadelphia, March, 1833.

To the Honorable the Select and Common Councils of the City of Philadelphia:

Gentlemen:—The subscribers beg leave to respectfully remonstrate against the plan now in agitation *for lighting the city with gas*, as they consider it most inexpedient, an offensive and dangerous mode of lighting. In saying this, they are fully sustained by accounts of explosions, loss of life, and great destruction of property, where this mode of lighting has been adopted.

We consider *Gas* to be an article as *ignitable* as *gunpowder*, and nearly as fatal in its effects, as regards the immense destruction of property; we believe the vast number of fires in New York and other cities may, in a great measure, be ascribed to this mode of lighting. The leakage of pipes and carelessness of stopping off the *gas* furnish almost daily instances of destructive effects. And, when we consider this *powerful* and *destructive agent* must necessarily be often left to the care of youth, domestics and careless people, we only wonder that consequences have not been more *appalling*. It is also an uncertain light, sometimes suddenly disappearing and leaving the streets and houses in total darkness.

The Waters of the Delaware and Schuylkill, now considered the most pure and salubrious in the world, as many long voyages have fully tested, must soon, we fear, experience the deterioration which has reduced the *waters of the Thames* to the present impure and unhealthy state, for no reservoir will be able to contain the immense fœtid drains from such an establishment, which very soon the rivers must be the receptacle, to the destruction of the immense shoals of *Shad* and *Herring*, and other fish with which they abound; the same cause must produce like effects. *Salmon, smelts*, and other fish, formerly caught in vast quantities, in the Thames, have nearly all disappeared, the constant digging up of the streets, the circumstance of *gas* pipes, which at the intersection of each square, must come in contact with the water pipes are difficulties and evils which we would anxiously avoid.

In conclusion, we earnestly solicit that lighting our city with oil may be continued.

And your petitioners, &c., &c.

None of the monstrous calamities anticipated with such fearful forebodings, after a lapse of twenty-five years, have befallen the city, nor has that *powerful explosive* element, *Gas*, blown the city from its foundations. We doubt not many of the intelligent gentlemen who signed the above remonstrance would feel a blush mount to their cheeks were the facts brought home to them. Many of them, we feel happy to say, are now found strongly in support of the Arch Street Railway, and favored its cause with their presence in Court.

The opinion of the Court, it is expected, will be delivered in the course of this week. Adjourned.

There were no matters of importance in the other Courts.

From the Miners' Journal of

Short Water Supply.

We were shown yesterday a note from the office of the Chief Engineer of the Water Department, addressed to Mr. Hyneman, notifying him not to make use of the Schuylkill water for a day or two, and we are informed that similar notices were sent to other large consumers. The water in the reservoirs is very low indeed, and the supply in the river is more scanty than we remember to have seen it for a long while. We desire to caution the public against any extravagant waste for the present.

12

"In 1718 it did not rain a single time from April until October. The growing grain was burned, the rivers dried up, the theatres (but wherefore is not stated) were closed by command of the police. The thermometer showed thirty-six degrees Reaumer, equivalent to 113 degrees Fahrenheit. In irrigated gardens the fruit trees bloomed twice. In 1723 and 1724 there was great heat. The summer of 1746 was hot and dry, the growing grain being calcined. It did not rain for months. 1748, 1754, 1760, 1767, 1778 and 1788 were years in which the summers were extremely hot. In the famous comet year—1811—the summer was warm, and the wine produced that season was very precious. In 1818, the theatres had to be closed on account of the heat, the highest temperature being 35 Reaumer, or 112 Fahrenheit. During the three days of the revolution of July, in 1830, the thermometer stood at 36 degrees Centigrade, about 97 Fahrenheit. In 1832, during the uprising of the 5th and 6th of July, the temperature was about the same."

In conclusion, we refer the curious in such matters to the *Daily Evening Telegraph*, of the 1st inst., as containing much valuable information too voluminous for insertion here. J. M. E.

Philadelphia, Seventh month, 7, 1870.

13

Submarine Pipe Laying—Another New Water Main.—There is now being laid across the Susquehanna river, at the upper part of our city a large size cast-iron water main for the Lycoming Gas and Water Company, which is intended for supplying the upper part of our growing city; the operations of laying this pipe is really very interesting and wonderful, showing how science can be made to assist mechanics. The pipes they are laying weighs about three quarters of a ton each, the pipes are lowered into the water and then connected by the Submarine Diver, Mr. Joseph C. Atwood, and his Assistant Mr. James Hughes, who appears to suffer no inconvenience, and who are able to work under the water (which is from seven to twelve feet feet in depth,) as those who are assisting them on the scows above. The joint they are using is known as the Robbins Patent Joint, and is made of lead, and cast into the bell of each pipe, (that however is done at the foundry,) in which there is a grove which holds the lead and prevents it being forced out by the pressure of the spigot-end of the pipe. The pipes are forced together with a Hydraulic jack, the one now used being of Thirty tons power, with this style of joint it only takes about twenty minutes to put together a pipe after it reaches the bottom of the river. Considerable number of our citizens, including those connected with the Water and Gas Companies of this city, have visited the scows where the pipes are being laid, and have expressed themselves as being entirely satisfied with the advantages and economy of this kind of joint over the ordinary lead joint; particularly as it can be laid in the water at any depth, and that too at a much less cost compared with any other mode of laying pipe. We are indebted to Mr. John P. Townsend, of New York, and Mr. Robt. C. Hicks, of Philadelphia, who have been entrusted by the West Jersey Foundry Company, of Camden, New Jersey, with this important undertaking. The pipes were all made by the New Jersey Foundry Co., who also contracted for the laying of them through the river. They are the owners of the right to make and sell the Robbins Patent Joint. This undertaking having been so very successful, (it being the first time that pipe has been put together under the water this way of this size.) We have no doubt but that the West Jersey Foundry will find it difficult to execute orders for this kind of work.

14

157

1

LOW WATER.

To the Editor of The Press:

SIR: Why is it that the proper persons do not issue an order to stop the washing of sidewalks and sprinkling of streets, now that the water in our beautiful Schuylkill and reservoirs is so very low. Up and down Chestnut from Broad, before 3 o'clock P. M., it is utterly impossible to draw water in the second-story, and in the first stories of some of our well-elevated houses for a few hours early in the morning you can with difficulty draw what is necessary for immediate use. I think the matter would be much improved if such an order as spoken of above were issued by the proper persons.

HOUSEKEEPER.

PHILADELPHIA, August 10, 1869.

2

Again we ask the housekeepers of this city to use the water less recklessly. The river at Fairmount is so low that great difficulty is experienced in pumping a sufficient supply of water into the basins. If everybody will practice a little economy, and if housekeepers will restrain their hired girls from pavement-scrubbing for a short time, we can get along comfortably enough. As it is, half the people of the city are inconvenienced by the wastefulness of the other half. We call special attention to the card of the Chief Engineer of the Water Works on the subject in another column.

7

1867–71

Property of Frederic Graff [illegible]

Department of Philada.

June 24/68

15

3

MENAGERIE.

4

The report of the Water Commissioners on the subject of a scarcity in the supply of Croton reminds us of the very important fact that in seasons of drouth the volume of water poured out by the whole Croton River is only 38,000,000 gallons, while our average daily consumption is no less than 60,000,000 gallons, the surplus of 22,000,000 being drawn, of course, from the reservoirs. At this rate, it is evident that, with the rapid annual increase of consumption, the river will soon be insufficient to supply us, and it is by no means certain that the storage reservoirs now building will meet the difficulty. The obvious requirement is economy, and there is no means of insuring this except by the use of water meters, and a change in the system of rates. If every man paid for the water he used, neither more nor less, just as he pays for gas, instead of a fixed tax per annum, the consumption could be brought within reasonable bounds. The urgency of some such reform is so evident, and it has been so often demanded, that it seems wonderful it should not have been put in practice long ago.

5

IMPROVEMENT OF THE SCHUYLKILL CANAL.—A large coffer dam has been placed in the Schuylkill, below the locks of the Schuylkill Navigation Company, and night and day powerful engines are pumping the water from within the coffer. The object of all this is to deepen the entrance to the locks of the canal, so that loaded boats may be passed in and out at low water. This will require the rocks in the bed of the river to be blasted, and when completed will be of great advantage to the boating interests. As at present arranged loaded boats must wait upon the tides, but the Reading Railroad Company seems determined to disregard tides, and float out their boats at pleasure.

6

in Agriculture, Science and Art, editorials, etc.

Dec 17/58

LOCAL AFFAIRS.

The Water Department.—The new assessment of water rates has been completed by the officers of the Water Department, and in a few weeks the duplicate for 1859 will be completed. By this assessment some 70,000 houses have been assessed, and the revenue of the department will be about $20,000 more than during the present year. The receipts of 1858 up to December 1st have been as follows:—Water rents of 1857 and '56, $10,204 20; penalties, $1,429 62; water rents of 1858, $377,385 06; penalties, $7,466 51; water pipe, $32,345 25; fractional rents, $17,328 82; making a total of $446,159 46; leaving about $5000 to be collected on the duplicate of 1858. The Register's estimate of receipts for 1859 amounts to $500,000. The capital invested in the water works of Philadelphia is $3,000,000, the interest upon which amounts to $180,000. The expenses of the department are about $160,000; thus leaving a profit to the city of over $160,000, which amount is paid over to the City Treasurer for the payment of expenses of other departments. For the purpose of extending the usefulness of these works, and to afford a better supply of water in certain sections of the city, the Finance Committee have reported an ordinance creating a loan of $221,500 for the laying down of new mains, raising the new reservoir at Fairmount nine feet above its present height, and a new ninety-feet mill house at the north end of the present wheel house, which will accommodate three turbine wheels and six pumps.

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executive of their selection.

INVIDIOUS.—Councils are finding no end of fault with the Highway Department, while they close their optics to the grossest mismanagement on the part of the Chief Engineer of the Water Department, and the Gas Trust. Mr. Dickinson works hard and conscientiously, and the only way for him to escape the animadversions of our City Fathers, is to contrive something with rich pickings in it, say a cobble stone meter, or a gravel tester, or a curbstone analyzer. Ah! Mr. Dickinson, if you would only walk in the footsteps of King Graeff, your streets would be buttered all over by the municipal guardians. Be wise, Mahlon—put money in somebody's purse.

8

9

WATER!

PHILADELPHIA, Sept. 27th, 1870.

To the Editor of the Daily City Item—DEAR SIR:—You will do a great service by calling attention to an advertisement in your paper of to-day in regard to the alarming low stage of the water in the pool supplying Germantown.

The water is now eleven feet below its normal level, and the pool does not now contain more than two or three days' supply at most. Unless it rain heavily, the place must inevitably be without water before the end of the week, as there is no means of rendering assistance from the other works. Please urge strict economy on the citizens, or disaster will be the consequence.

Very respectfully yours, &c.,

FRED. GRAFF,

Chief Engi— Water Dep't.

10

J. Kenniff.

Dec 14/1858

The Old Wooden Water Pipes.—Last week the last of the old pine wood water pipes were removed from Broad street, by the Water Department, to make room for iron pipe. The last of these logs were laid in 1832, and extended on each side of Broad street, from Filbert to Vine, and out Vine to Fifteenth street. The city had altogether 241,604 feet of Pine logs laid at various times, the first having been connected with the old water works at Penn Square. The first iron pipe was laid in 1804, and again in 1817, wooden logs being laid in the interim. These logs were taken from the ground in a perfectly sound state and still fit for use, except along streets where large steam engines have been introduced; at these points the pressure upon them was too great, hence their removal at this time.

11

SCARCITY OF WATER.—During the whole of the past month the water in the Schuylkill has been unprecedently low and is still decreasing in volume. The exigencies of the Schuylkill Navigation Company, who claim the prior right to the water by the terms of their charter, require the stopage of all the wheels at Fairmount for a portion of every day, this with the enormous consumption of water at this season of the year have taxed the works to their utmost. It is now difficult to keep up the supply even with all the available power in operation, and therefore our citizens should be careful not to waste any water and use it sparingly as possible.

12

☞ DEPARTMENT FOR SUPPLYING THE CITY WITH WATER,

CHIEF ENGINEER'S OFFICE,

NO. 104 SOUTH FIFTH STREET,

PHILADELPHIA, August 12, 1869.

The long-continued drouth and consequent unprecedented low stage of water in the Schuylkill makes it difficult with the present machinery to keep an adequate supply of water in the reservoirs.

Citizens are, therefore, earnestly requested to abstain from waste of water in any form whatever. It is particularly desired that no use will be made of the wash-pavement pipes, private fountains, and other wasteful appliances, whilst the present low stage of water exists.

It is believed that all good citizens will cheerfully comply with the request intended to conduce to their own safety and comfort.

FRED. GRAFF,

au13-2t Chief Engineer Water Department.

Dup

LOCAL AFFAIRS.

Water! Water!—In various parts of the city, complaints are made by citizens that they are not able to obtain a full supply of water. The grumblers have become so numerous that the Chief Engineer of the Water Department finds his office a difficult and vexatious one, and, so far as we have been able to ascertain, he is making every effort to remedy the great evil. The various works belonging to the city were, it is stated by the present Chief, greatly out of order at the time of his election, and in consequence of there being but little money credited to the item of repairs, he has been unable to progress as rapidly with the improvement of the works as the wants of the citizens demand. There are four engines at the Schuylkill, or Spring Garden Works, one of them being a large Cornish engine, and three of these engines must be kept constantly at work in warm weather to supply the demand of the districts through which the pipes connected with the works are laid. All these engines were partially out of order when the new Chief came into office, and during the time the most urgent repairs were being made but one or two of the engines could be run, thus rendering it impossible to keep up a full supply. The works have now been so far repaired that these engines are kept in constant motion, and thereby the basin is always kept full.

The Fairmount Works, which supply the old city proper and the lower districts with water, are in much better repair. In consequence of the leaking of the large basin, back of the penitentiary, a sufficient supply of water cannot be stored in that section to satisfy the demand made on Saturdays, when the water is more generally and profusely used. This basin is constructed to hold water to the depth of 17 feet, but in consequence of its dilapidated condition, the pumps have to be stopped when water to the depth of 12 feet has been discharged into it, thus depriving the citizens of several millions of gallons of water. This leak in the basin cannot be stopped until Councils make an appropriation for the purpose, the item for repairs in the general appropriation bill having been nearly exhausted. The complaints from the Twenty-fourth Ward have been both loud and frequent of late, in consequence of the fact that during a portion of the day, for some time past, scarcely any water could be obtained.

The supply of water at these works is stored in a stand-pipe, and this holds so small a quantity that if the engines are not kept constantly at work, the supply to citizens is soon exhausted. In consequence of the bursting of the guard valve on the ascending main, and the engines requiring repairs, an adequate supply could not be kept up. The repairs have only been partially made, and until these are completed, a full and ample supply cannot be furnished at all times. The Kensington Works are also in bad order, and incapable of performing work so as to keep up the supply of water demanded by the citizens in warm weather. The pumps connected with the two engines have been bursted for a long while and only kept together by iron bands, so that at each stroke of the piston, a large quantity of water, which should be forced to the basin, is lost through the leaks in the pumps.

The subject of furnishing our citizens with a full supply of water at all seasons of the year is one of great importance, and should demand the immediate attention of the proper authorities; and when the plan, now being prepared by the Chief Engineer of the Water Department, is submitted to Councils, prompt action should be had, if his suggestions are useful and practicable.

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of the Park without the license of the Park Commission.

9. No person shall expose any article for sale within the Park without the previous license of the Park Commission.

10. No person shall take ice from the Schuylkill within the Park without the license of the said Commission first had, upon such terms as they may think proper.

11. No threatening, abusive, insulting, or indecent language shall be allowed in the Park.

12. No gaming shall be allowed therein, nor any obscene or indecent act therein.

13. No person shall go in to bathe within the Park.

14. No person shall fish or disturb the water-fowl in the pool, or any pond, or birds in any part of the Park, nor discharge any fireworks therein, nor affix any bills or notices therein.

15. No person shall have any musical, theatrical, or other entertainment therein, without the license of the Park Commissioners.

16. No peson shall enter or leave the Park except by such gates or avenues as may be for such purpose arranged.

17. No gathering or meeting of any kind, assembled through advertisement, shall be permitted in the Park without the previous permission of the Commission; nor shall any gathering or meeting for political purposes in the Park be permitted under any circumstances.

Section 22 provides penalties for violating rules.

Section 24 authorizes Councils to widen and straighten any street as may be required to improve the approaches to the Park.

cont. from 155

13

WATER SUPPLY OF PHILADELPHIA AND LONDON.—The following statement, prepared by Mr. Graeff, Chief Engineer of the Water Works, shows the water supply of London in 1867, as compared with Philadelphia during the same period:

Locations in London.	No. of Houses.	Gallons per day.
Chelsea	26,875	8,087,208
West Middlesex	36,881	8,816,486
Southwark and Vauxhall	71,558	13,639,758
Grand Junction	29,190	9,533,432
Lambeth	38,320	8,975,583
New River	113,462	23,790,667
East London	92,652	19,298,241
Kent	34,504	6,468,872
Total from Thames	200,824	49,042,467
From River Lea, &c	240,618	49,557,781
Grand Total	441,442	98,600,288

Used for domestic purposes only, 81,033,800 gallons per day, equal to 26 gallons per head of the population, estimated at 3,081,134, or equal to 223 gallons per house.

In Philadelphia for 1867, the average supply per day was 319 gallons per house; the maximum supply was 419 gallons; being an average supply of 40 gallons per head, and a maximum supply of 52 gallons per head, estimating the population within the water district at 750,000.

Lumber, Dec 15/58 …5,688,031 | 35,896,901

The Water Works.—Since the commencement of cold weather, and a falling off in the demand for water supplied by the water works, the chief engineer has embraced the opportunity to have all the engines placed under repair, and by the spring the works will be better able to meet the demand upon them. The head and flume gates at Fairmount, which have been in use for eighteen years, have been removed and new ones put in their places. The grounds about these works have also been beautified, particularly that portion north of the reservoir. About three hundred choice trees have been planted, and walks, laid out in various shapes, have been gravelled, and by the opening of spring the grounds will be ready for the use of the public. There is about thirty acres of ground within the enclosure at Fairmount, and, as now improved, will be the prettiest place of resort in our city, combining pleasant summer shade and a wide and extended view of the romantic scenery along the Schuylkill, as well as a splendid view of the consolidated city.

The duplicate of water rents for 1859 is nearly prepared, a large force of clerks being now employed, a portion of whom have taken possession of the lower room in the Mayor's office, and are arranging the books by wards. Each wash-pave, hydrant or basin is itemized, so that one can be stricken from the account at any time individuals may desire to dispense with any part of the water supplied to them. The highest water rent paid by one individual is $1800 per annum, the water being used for manufacturing purposes. There are others who pay from $200 to $1600. The highest amount paid for a private dwelling is $31.

Home Missionary Society.—The twenty-third

Section 2. That hereafter there shall be levied a tax to defray the expenses of the Water Department, to be styled a Water Tax, against each and every dwelling house situate on any street, lane, alley, court, or other place where the water pipe is laid; and as fast as it may be laid along the line of any such property as aforesaid, it shall be the duty of the Chief Engineer to assess a rate of tax of such amount against every dwelling house as is now charged where the water is introduced. And the Register of Water Rents is hereby authorized and directed to collect the same at the time water rents are collected by law; and in the event of any owner or owners of such property neglecting or refusing to pay the same on or before the thirtieth day of September in each year hereafter, the same shall be registered against his or their property, and be collected as other registered taxes are now collected by law. Provided, That the owners of such properties cannot show that the said property obtains water from other sources than the Water Department of the City of Philadelphia.

Section 3. That hereafter no permit shall be issued for the construction of wash paves, except such permit shall contain a proviso that the same shall be constructed so that the water may be checked from stop in the street, and any person who shall construct or cause to be constructed a wash pave without having a cock that may be used from the street, shall be liable to a penalty of twenty dollars for such and every such offence, to be recovered as sums of like amount are now by law recoverable.

Section 4. That the sum of three thousand dollars is hereby appropriated to execute the duties enjoined upon the Chief Engineer of the Water Department by the first section of this ordinance.

Leasing of the City Wharves and Sale of Real

14

THE CITY WATER WORKS.

The January work of our various city water works informs us of the extent to which the improvements made in the Fairmount establishment have enabled it to do the great work of supplying Philadelphia with hydrant water. Of the whole volume of water pumped during the month by all the different works, 730,464,667 gallons, it seems that 531,713,063 gallons were pumped at Fairmount, being about two-thirds. Nearly all of the large amount of water formerly supplied from the Delaware works in Kensington has been furnished from Fairmount since the Delaware reservoir was connected with the latter. The Spring Garden or Schuylkill works supplied 122,250,834 gallons, and this source will have to be employed until the capacity of the Fairmount works shall have been much more enlarged, as will be done by the new turbine wheels to be put in place of the old breast wheels.

Such works as those at the Spring Garden and Kensington establishments are very expensive, on account of the cost of working their steam machinery, and although they will always have to be retained and kept in working order as alternatives, it is cheapest and most desirable to obtain most of our supply of water from the Fairmount works, which are moved by water power. It is even proposed to connect the new West Philadelphia reservoir with Fairmount by a pipe carried over Girard avenue bridge, and to supply that district also from Fairmount, when the works at the latter point are sufficiently increased in capacity. At present the West Philadelphia works, moved by steam, are kept fully employed to answer the demands of that large and rapidly growing population. During January those works pumped 55,673,550 gallons of water, and if it is proposed to supply West Philadelphia from Fairmount, this is the least quality that will be needed.

During the month past the average daily supply furnished by all the different works was 24,851,786 gallons, and the estimates are that we shall have to increase the capacity of our works at once, so as to be adequate to a supply of 30,000,000 daily. The average quantity pumped daily at the Fairmount works during January has been 17,152,067 gallons; so that the capacity of the latter will have to be very nearly doubled to meet the ordinary demand without taxing the other works. In other words, no matter how fast we may improve the Fairmount works, we shall have to employ the others for months to come.

Regarding the question purely as one of economy, in reducing the regular cost of furnishing a good supply of water, the most liberal appropriations for the purpose of strengthening, improving and extending the Fairmount works would more than repay in the saving of the cost of working the steam machinery at the other establishments. We see this demonstrated beyond the shadow of a doubt by the experience we have with the Kensington works. We have successfully overcome the need for using them, and are now supplying the northeastern districts from Fairmount. Although it may be a task of much more difficulty to overcome the need for using the other steam establishments, yet it can and should be done as soon as possible.

16

Octr 25th/58

[For the Philadelphia Evening Bulletin.]

Water for Philadelphia.

A PLAN TO SUPPLY THE CITY ON BOTH SIDES OF THE SCHUYLKILL WITH AN INCREASED SUPPLY OF PURER WATER.

The water in the present dam, between Manayunk and Fairmount, is injured by the great quantities of dye waters and other filth, let into the river below the upper dam, which is situated at Flat Rock, immediately above Manayunk. The water in this upper basin is much purer, and in great supply. Immediately abreast of the dam, on the west side, lies Fairview Summit, a large piece of table land, 500 feet high, with gradual slopes and admirably adapted for the construction of a great reservoir. It is the highest land within the same distance of the heart of the city; and the height is sufficient to furnish a choice of elevation, to force the water to every part of the city, on both sides of the Schuylkill river to the tops of the highest buildings. Recent surveys, by a Board of Commissioners, appointed by the State to open a road from Belmont avenue towards Norristown, passing over this summit, disclosed the fact, that a regular grade on the route exists from the summit down Belmont avenue. Any quantity of coal can be cheaply delivered at the upper dam, by the canal or railroad, to furnish steam power to force sufficient water from the upper basin, into a reservoir, at any suitable elevation, on this summit, for the supply of the city for the present and future! Large mains can run from the summit down Belmont avenue, can cross the river on a stone aqueduct or bridge, similar to that lately built at Laurel Hill by the Reading Railroad; which can be built at Girard avenue, with a carriage way over the mains, and thus make it a great bridge for travel as well as an aqueduct. These mains can connect with large stand pipes on both sides of the river Schuylkill, and with the present Fairmount and other basins, provided with self-adjusting valves to admit as much water into the basins as needed. From these stand pipes the water can be conducted over the whole city on both sides of the river, in abundant supply, and much purer water than at present used.

H.

17

COMMON COUNCIL OF PHILADELPHIA,
CLERK'S OFFICE, PHILADELPHIA, Jan 21, 1870

In accordance with a resolution adopted by the Common Council of the city of Philadelphia on Thursday, the twentieth day of January, 1870, the annexed bill, entitled

"An Ordinance creating a loan for the further extension of the Water Works," is hereby published for public information.

JOHN ECKSTEIN,
Clerk of Common Council.

AN ORDINANCE creating a loan for the further extension of the Water Works.

SECTION 1. *The Select and Common Councils of the city of Philadelphia do ordain,* That the Mayor of Philadelphia be and is hereby authorized to borrow on the credit of the city, from time to time, such sums of money as may be necessary for the further extension and improvement of the Water Works, not exceeding in the whole the sum of one million dollars, for which interest not to exceed the rate of six per cent. per annum shall be paid half yearly, on the first days of January and July, at the office of the City Treasurer. The principal of said loan shall be payable and paid at the expiration of thirty years from the date of the same, and not before without the consent of the holders thereof; and the certificates therefor, in the usual form of the certificates of city loan, shall be issued in such amounts as the lenders may require, but not for any fractional part of one hundred dollars or, if required, in amounts of five hundred or one thousand dollars; and it shall be expressed in said certificates that the said loan therein mentioned and the interest thereof are payable free from all taxes.

SEC 2 Whenever any loan shall be made by virtue thereof, there shall be, by force of this ordinance, annually appropriated out of the income of the corporate estates and from the sum raised by taxation, a sum sufficient to pay the interest on said certificates; and the further sum of three-tenths of one per centum on the par value of such certificates so issued shall be appropriated quarterly out of said income and taxes to a sinking fund, which fund and its accumulations are hereby especially pledged for the redemption and payment of said certificates.

RESOLUTION to publish a loan bill.

Resolved, That the Clerk of Common Council be authorized to publish in two daily newspapers of this city, daily for four weeks, the ordinance presented to the Common Council on Thursday, January 20, 1870, entitled "An Ordinance for the further extension of the Water Works." And the said clerk, at the stated meeting of Councils after the expiration of four weeks from the first day of said publication, shall present to this Council one of each of said newspapers for every day in which the same shall have been made.

1

delphia levers at the ends and not at the sides of the engines, as they had hitherto been arranged. 1768 —

79 Complaints were made to the Assembly in January by inhabitants of Philadelphia, Chester and Berks counties, that the impediments to the navigation of the Schuylkill had not yet been entirely removed. They also complained that the fish in the river were destroyed by a manner of fishing in the lower part of the river and about the city, where, by means of three or four seines, kept constantly going in the deep pools, very few fish were allowed to escape and reach the upper portions of the river. This subject had been a matter of complaint in the previous year, and the Assembly had granted leave to the petitioners to bring in a bill prohibiting fishing during certain nights in the week; but nothing further was done at that time. The matter produced an address to the people in the *Pennsylvania Chronicle*, signed "Philadelphus," which went at length into a consideration of the subject of the navigation of the river. This writer was the first to take a broad view of the matter, and to propose a system of dams which would render the river useful for slack water navigation. He declared that the attempts previously made to clear out the stream by removing the obstructions of rocks and stones, principally at the Falls, rendered the river shallower above and the navigation less practicable than before, the depth of water being insufficient for vessels of any useful burthen except during the spring and fall freshets, when the current made the passage downward dangerous, and a return difficult in consequence of the swiftness of the stream. He made an estimate that the water at Reading was not more than sixty or one hundred feet higher than at Philadelphia, to which place there was a gentle and gradual fall. Sixteen dams, each six feet high, it was supposed, would raise the stream sufficiently by the back water to render navigation easy. The cost of each of these dams was estimated at £6000, or £96,000 for the whole. The amount to be transported downward annually would be at least fifteen thousand tons, and, upward, five thousand tons. If one dollar per ton were paid to the proprietors of the navigation the income would be £7500 per annum, of which £500 would be sufficient to pay the expenses of keeping up the work, and the balance, £7000, would pay more than seven per cent. interest upon the investment. The rate of hauling goods from Philadelphia to Reading was fifty shillings per ton. If there was a good road on the banks of the Schuylkill, the current moderated by means of the dams, and the water kept at a depth of three feet and upwards, goods might be carried by water for fifteen shillings per ton. A flat of one hundred tons burthen might be navigated from Reading by four men and two horses in a week or ten days at an expense of £10 per week, leaving, on one hundred tons downward and twenty-five tons back, a profit of £47 17*s.* 6*d.* on the voyage. In conclusion, the writer proposed that a company should be formed to render the Schuylkill navigable. His plans were feasible and his views far-sighted. He was not successful in embodying a company, but his suggestions were those which were substantially adopted many years afterward, when measures for the navigation of the Schuylkill were resolved upon.

The street commissioners advertised in the spring for a person to contract "to carry

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LAUGHABLE FEATS WITH THE WHEELBARROW.

Ben. Herley Poore, wheeled a barrel of apples from Newbury to Boston, 36¼ miles, in 2½ days, including stoppages.

Sandford's minstrels, with ten barrows, from West Philadelphia to East Philadelphia, 2½ miles, 17 minutes and 16 seconds.

William Kennedy, the Survivor of the Ship

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2 1870/

THE EVENING STAR.

PHILADELPHIA, TUESDAY, AUGUST 9.

BELMONT WATER WORKS.

SOME FACTS ABOUT THE NEW PUMPING ENGINE.

Editor EVENING STAR.

The public was notified last week that the new pumping engine, just erected at the Belmont Water Works, had been started. A brief review of the "insult to Philadelphia mechanics, and the injury to the city," resulting from the purchase of this engine, may be of interest.

In September, 1865, the Water Committee through Mr. Birkenbine, then Chief Engineer, contracted with Messrs. Matthews & Moore, of this city, for two Cornish engines. One for Roxborough, which has been in position, completed, and successfully tested for over a year, but is not yet in use, and one for West Philadelphia. In May, 1867, the Water Committee through the Chief Engineer, Mr. Graeff, annulled the contract for the latter engine after foundations had been prepared and work upon it commenced.

In July, 1867, Messrs. Matthews & Moore were asked for proposals for another engine, and refused, protesting against the unjust action in regard to their contract. They appealed to Councils to protect them, but our City Fathers did not protect them or the city.

In February, 1868, Mr. Graeff asked for proposals from several of our city firms for 5,000,000 gallon engines, stating that "no form of engine is dictated except that it must not be Cornish." Messrs. Merrick & Son responded, and offered to erect two sets of pumping apparatus, each capable of raising 5,000,000 gallons per day, 215 feet high, through a 30-inch main 4,250 long; duty 50,000,000 foot pounds, as required by the chief engineer for the sum of $57,000.

Mr. Graeff cavilled about the details of the engine, although no form was to be dictated, and gave the contract to Worthington of New York, for $95,000, or an advance of 70 per cent. on the price of Philadelphia engines. These prices are without boilers.

Heretofore every engine in our own water works, and many others for various places, have been built by Philadelphia mechanics, and had this New York pump been superior to our own make, or cheaper than our own mechanics offered to build for, there would have been an excuse for its selection. But a premium of 70 per cent. is paid for a form of engine generally considered by experts in such work, as far below the average of pumping engines in durability and economy.

Mechanics of Philadelphia your reputation is assailed by those who should do most to protect you. You who handle the hammer and chisel, run lathes and know what a job is worth, go to the Belmont Water Works and see for yourselves, if there is in the one of these engines just started over $15,000 worth of material and workmanship.

Insist upon an honest public trial by fair men, and not by agents of the patentee, to determine whether it is worth the $47,500 to be paid for it, and see that it is not paid for until it proves itself worth more than Philadelphia made engines. We do not object to paying for any superority that may be possessed by the New York machine, but we do protest against a quick settlement, and then, if the engines do not come up to the standard, be told "It is too late now, they are paid for." Let us hear from this engine before its companion is erected.

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drowned"

90

Water Down Town.—The water to be passed through the large main, on Broad street, will be let on this week, the pipe having been tested below South street. The citizens of the lower section of the city will have a head of water 16 feet greater than those residing in the old city, and 25 more when the raising of the reservoir is completed, giving an entire fall of 119 feet above tide water.

At 6 A. M. yesterday morn-

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The Large Fountain on the north side of the Fairmount basin will be played on the Fourth of July. This is the largest basin in the city, and the jet of water will be thrown at a greater height than any heretofore constructed in Philadelphia.

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DAY. Oct 28/70

HONORED IN THE BREACH.

The injunction, "Wash, and be clean," is well put, and should be heeded and obeyed, as a sanitary rule. But rules of this nature are not arbitrary to all people under all circumstances. This rule, for example, may be more honored in the breach than in its observance. It does not apply to all people alike. All should maintain cleanliness, no doubt. Some, in order to maintain such a condition, must bathe every day. Such are those who labor where there is much dust, and who perspire a great deal. The waste left on the surface by excessive perspiration, and the deposit of dust and grime must be removed daily if the individual would enjoy the most generous measure of health. Such people must eat more and grosser food than such as perform little manual labor, and the waste is proportionably greater. But as to those who take life leisurely, or follow sedentary vocations, no rule can be made arbitrary as to all. Vitality approaches fever in some systems, and such persons may take a full bath every morning on rising, with marked advantage. Others with less vitality may bathe every day at eleven o'clock, forenoon, with most profit and least risk. Others cannot safely take full baths oftener than three times a week in warm weather, and a less number in winter. But even these may use a sponge or towel every day with more or less increase of bodily comfort.

But what we set out to say, was, that the injunction to wash and be clean is sometimes obeyed to the general disadvantage in this city. When construed to mean that the brick pavements shall be kept saturated with water the year through, compliance with the injunction becomes a public nuisance. Some people may have noted that in the weekly mortuary report consumption leads the mortal host. Often it leaves all other diseases far in the rear. Carefully looking over the field we conclude that this excess of deaths by consumption is not due to natural causes, such as climate and locality. How much of it is invited and induced by this senseless drenching of the brick walks? Perhaps nobody can tell exactly; but that the evil practice contributes to the humidity of the atmosphere is beyond dispute. And humidity thus created is not healing to diseased bronchial tubes and tender lungs. If not healing it must be irritating.

Why should the brick pavements be drenched with water every day? The dirt generated and deposited by travel, or by the wind, is not unhealthy. A good broom will remove it if its presence becomes offensive. Footpave dirt does not generate disease. Even the dust which is raised by the wind harms nobody who breathes, as nature intended, through the nostrils. The filth which generates disease pertains to waste which finds its way from back premises by the alleys, or otherwise, into the streets and gutters. Turn the streams from the wash-paves into the gutters, and follow with a stiff broom, and you may leave the pavement to the genial rains. They will wash it sufficiently of all the filth which defies the broom. One may as well live in a bog as in some parts of Philadelphia where this abuse exists. There is such a thing as clean dirt; sand and gravel, for example. How many of these pavement-drenchers pause to ask if the process is really necessary? Not many. The custom—for it is nothing more or better than a custom—has become a very great nuisance in some quarters. The splashing of boots and breeches constitutes the least important of all objections which may be urged. Boots may be polished and breeches dried, but tender lungs cannot be renovated, or even soothed, so cheaply or easily. Probably no law is necessary; or if enacted, would correct the palpable wrong. If corrected at all it must be done by showing that the custom is unfavorable to public health, upon which showing the vast majority of slaves to the custom will abandon it of their own motion.

6

6

TOWN-TALK.

—It ought to be distinctly understood that Graeff's ordinance for the reorganization of the Water Department is not worth the paper it is written upon. The ignorance of law shown by its author is only excelled by his ignorance of hydraulics, and the mechanical appliances necessary to carry on successfully a water works. For instance, section 10 of Graeff's ordinance provides "That it shall be *lawful* for the Chief Engineer of the Department for Supplying the City with Water, and such other persons as may be empowered for the purpose by him, to *enter* at all seasonable times in any building, lot of ground, or premises, for the purpose of examining the pipes of conduit, and ascertaining whether the same, and the cocks and fixtures thereof, are in proper order and repair, and for cutting off the pipes of communications where delinquencies occur in the payment of the water rent, and ascertaining whether any violation of this ordinance may exist; *and any person who shall obstruct or oppose the officer aforesaid, in making such examination*, shall forfeit and pay for each offence the sum of twenty-five dollars." The attention of members of Select Council was called to the absurdity of this section as it could never be enforced, as any man would be justified in *braining* either Mr. Graeff or any of his subordinates, if an attempt should be made to enter any citizen's house without his permission and without a warrant setting forth the commission of some offence. It is true that of late years we have fallen into a disregard of law; but every one who undertakes to act under this ordinance must understand that he does so at the peril of life; for Mr. Graeff may be assured that the people while submitting tamely to his incompetency, will not tolerate his impertinence or infringement of their rights guaranteed under the Bill of Rights. The eighth section of the Declaration of Rights enacts "that the people shall be

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EDNESDAY, JANUARY 18, 7

THE CITY OF HOMES.

The Number of Dwelling-houses in Philadelphia—A Comparison with 1860.

Philadelphia is essentially a city of homes—having more dwellings in proportion to her population than any other city in the United States, if not in the world.

From the returns of the Assistant United States Marshals who took the census of the city last year, it appears that the number of buildings used as dwelling-houses, and excluding all churches, school-houses, storehouses, factories, public buildings, &c., was, at the time the census was taken, 112,457. Below we give the number of dwelling-houses in each ward, according to these returns, with the population of each ward, according to the revised enumeration (the aggregate including 296 not distributed among the different wards), and the average number of persons to each dwelling in the different wards and the city at large, comparing the figures with those for 1860:

	1860.			1870.		
WARDS.	Population.	Dwellings.	No to one H'se	Population.	Dwellings.	No to one H'se
1st*	30,886	5,092	6.01	25,899	5,126	5.05
2d	29,123	4,938	5.90	30,224	5,149	5.87
3d	19,929	3,214	6.20	19,149	3,532	5.42
4th	23,461	3,725	6.30	20,844	3,379	6.17
5th	24,792	2,676	9.26	18,739	2,352	7.97
6th	14,882	1,811	8.22	12,067	1,689	7.14
7th	31,267	4,218	7.41	31,560	4,989	6.33
8th	27,770	3,479	7.98	22,285	3,149	7.68
9th	17,196	2,389	7.19	16,648	2,483	6.70
10th	21,849	3,559	6.14	23,353	3,909	5.97
11th	16,681	3,528	4.73	14,847	2,432	6.10
12th	16,681	2,656	6.28	15,171	2,383	6.37
13th	20,045	3,393	5.91	19,945	3,415	5.84
14th	24,258	3,953	6.14	22,637	3,876	5.84
15th	32,091	5,118	6.27	44,622	6,951	6.42
16th	20,067	3,453	5.81	19,256	3,525	5.46
17th	23,264	3,906	5.96	21,341	3,428	6.22
18th	20,441	3,553	5.75	26,358	4,641	5.68
19th†	38,828	6,709	5.79	45,251	8,090	5.59
20th	29,963	4,805	6.24	56,454	9,198	6.14
21st‡	17,159	2,947	5.82	13,865	2,601	5.33
22d	17,173	2,904	5.91	22,530	4,079	5.52
23d	23,985	4,111	5.83	28,887	3,815	5.48
24th§	23,738	3,495	6.79	24,921	4,431	5.62
25th†	......	......	......	18,647	3,572	5.22
26th*	......	......	......	36,611	6,231	5.88
27th§	......	......	......	19,286	2,288	8.43
28th‡	......	......	......	10,329	1,744	7.08
Total	565,529	89,632	6.31	674,022	112,457	5.99

*In 1860 the First ward included the Twenty-sixth.

†In 1860 the Nineteenth ward included the Twenty-fifth.

‡In 1860 the Twenty-first ward included the Twenty-eighth.

§In 1860 the Twenty-fourth ward included the Twenty-seventh.

The number of dwelling-houses in the city, according to the most available local sources of information, is about 115,000, or but slightly in excess of the number returned by the census authorities, so that the figures of the latter are nearly correct—much more so, we imagine, than their report of the number of inhabitants. While the population has increased during the ten years at the rate of 19.18 per cent. only, the number of dwellings has increased 25.47 per cent. The average number of persons to a dwelling in 1860 was 6.31; in 1870 it is placed at 5.99. If the ratio of 1860 had been preserved, there would be a population of about 710,000, or some 36,000 more than accorded us by the census-takers.

According to the census-takers, the number of dwelling-houses, as shown above, has decreased in nine different wards—the Fourth, Fifth, Sixth, Eighth, Eleventh, Twelfth, Fourteenth, Seventeenth, and Twenty-third. The most noticeable and improbable decrease is that shown in the Eleventh ward, which had 3,528 dwelling-houses in 1860, and in 1870 is credited with only 2,432, a decrease of nearly one-third. The population of this ward in 1860 was 16,681, and in 1870 it was placed at 14,847, a small decrease when compared with the alleged decrease in the number of dwellings.

8

Jun 29

THE WATER QUESTION.

8/1870

To whom does the responsibility attach? During four hours of yesterday the residents of the Fifteenth ward were without a drop of water. Water is now running over the dam at Fairmount, and yet by reason of inadequacy in the machinery for pumping, or some defect in its management a whole district is deprived of a necessity not of comfort alone, but of health. Last spring the citizens residing in the wards supplied by the Corinthian avenue basin held meetings, and called upon Graeff to account for the scarcity. He looked into it, and it was discovered that a careless workman had turned off the stop-cock of one of the mains. Has similar carelessness been at the bottom of yesterday's dearth? Look into it, Mr. Graeff, and please don't suppose that whilst you and your family are at Cape May five thousand of our citizens will tamely submit to go without water.

We don't want a recurrence of the scenes of last summer—housewives walking squares for water for their tea, and the Fire Department totally paralyzed and permitting buildings to be destroyed for fear of wasting that which it was not improbable might be required for the support of life. We had a drought then and it is not unlikely that we shall have the same now, and yet in the face of the example of last year our City Councils have failed to make any adequate provision against a return of so great a calamity. Graeff may be inefficient—the stop-cock business we can't forgive—but the fault and the blame belongs principally to our city fathers. Years ago the propriety and necessity of introducing steam power to do the work, instead of wasting nine gallons to raise one, was fully demonstrated. Late last night there was but three inches of water going over, with the chances that this morning there will be less. If there is no other remedy we appeal to our public-spirited fire companies to go to work; that might supply us, as well as prevent the captain of every petty canal boat from recovering damages from the city.

WATER. 9

Fountains Erected Throughout the City During the Past Year.

A petition of the Philadelphia Fountain Society, referred to in Council proceedings elsewhere, was presented yesterday afternoon in the City Councils. It requested the city to keep in repair the fountains erected throughout the city by the society, and in this connection it may be proper to give a list of those fountains which were erected during the past year. They are as follows:

No. 1. At Eighteenth and Locust streets. Presented by Henry Croskey Bazley.

No. 2. At Sixth and South streets. Presented by the Association of Pennsylvania Democrats.

No. 3. At Seventh and Lombard streets. Presented by P. E. City Mission.

No. 4. At Tenth and Reed streets. Presented by Mr. Owen McQuade.

No. 5. At Lancaster avenue and Haverford road. Presented by Mrs. A. E. Fraley.

No. 6. At 109 Locust street. Presented by the Philadelphia City Mission and Tract Society.

No. 7. At Sixth and Locust streets. Presented by Charles H. Muirheid.

No. 8. At Delaware avenue and Spruce street. Presented by the Philadelphia and Trenton Railroad Company.

No. 9. At Broad and South streets. Presented by First Independent Presbyterian Association.

No. 10. At St. Mary street, below Seventh. Presented by the friends of St. Mary-street Sunday-school Mission.

No. 11. At Fifth street, below Market. Presented by the Fifth-street Market Company.

No. 12. At St. Mary street, above Seventh. Presented by the Spring Garden M. E. Church.

No. 13. At Thirty-first and Market streets. Presented by the Pennsylvania Railroad Company.

No. 14. At Washington avenue, below Swanson street. Presented by the Pennsylvania Railroad Company.

No. 15. At Nineteenth and Walnut streets. Erected by the society.

No. 16. At Front street, above Chestnut. Erected by the society.

No. 17. At Moyamensing avenue, above Reed street. Erected by the society.

No. 18. At Catharine and Swanson streets. Erected by the society.

No. 19. At Seventh and Alaska streets. Erected by the society.

No. 20. At 513 Hurst street. Erected by the society.

No. 21. At Spafford and Baker streets. Erected by the society.

These, with the 11 fountains erected during the year 1869, make a total of 32.

The "Weather-Strip" Thieves

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la Post wed.

april 5/71

CORRU 10

92

Councilmanic Investigation—A $55,000 Contract—The One Man Power—Injustice to Philadelphia Mechanics.

Yesterday a meeting of the committee of Common Council to investigate whether Chief Engineer Graeff gave out a

CONTRACT FOR $55,000

worth of work without having invited bids, was held in the clerks of Councils' office, Mr. Mitchell in the chair. The clerk read this

COMMUNICATION,

upon which the investigation is based:

To the Select and Common Councils of the city of Philadelphia—Gentlemen: On the 20th of September, 1870, we addressed communications to your honorable body, asking permission to offer bids for the new pumping engines required in the enlargement of the water works of the city of Philadelphia. We find an ordinance approved the 17th of July, 1870, which, among other items, makes an appropriation of $100,000 for an engine and pump for Roxborough Water Works. Since then we have not seen any further action of Councils; and the next information we have upon this matter is found in the report of the Chief Engineer, lately issued, in which he states that a contract has been awarded to Mr. Worthington, of New York, for his engine, briefly alluded to (see page 12 of report presented to Councils for 1871). We, as manufacturers and tax-payers of this city, respectfully request the appointment of a committee to investigate the manner in which this contract is alleged to have been made, believing it will be found to be in direct violation of the act of consolidation, section 27, approved May 13, 1856, and contrary to the usages of the department.

WILLIAM M. HENDERSON,
Residence, No. 3843 Bridge street.
Norris Iron Company,
T. T. WOODRUFF, President,
Office, No. 1345 Buttonwood street.
March 22, 1871.

Mr. Henderson was called, and stated that for a long time

HE ENDEAVORED TO GET CITY WORK,

but was always unsuccessful. This communication was the third one he had sent to Councils. The first letter, by some extraordinary means, never got to the notice of Councils until ten days after it was sent, and ten days after the engines which he had asked Councils to see had ceased operations. He thought that he could build a pumping engine as well as in New York, and that he should, at least, have an opportunity to bid for city work. This had not been allowed him. He believed, if possible, the money collected in the city from taxes, etc., should go to

PHILADELPHIA MECHANICS.

There was an act passed in 1856 to prevent just what he now claimed, namely, giving a contract without having asked bids.

The chairman read the section Mr. Henderson mentioned, which stated that no work called for in the annual estimates should be given out except to the lowest bidder.

BUT IN SUCH AN EXTRAORDINARY CASE

as this, where all improvement is not covered by these estimates, the department may give the contract to the best, though he may not be the lowest bidder.

Mr. Henderson. I claim that this contract was given out without funds having been appropriated to meet it.

Mr. Bardsley. A committee authorized this contract to be made with Mr. Worthington for this engine on the 6th of September, 1870, and that fourteen days after that award you sent in your communication, praying to be awarded the contract for this work. Your argument that you were not heard is incorrect.

Mr. Henderson. I would like to have the public know that it is not necessary to publish proposals or to give out work to the lowest bidder in the Water Department, but that the person in power at that time may have the privilege to give the contract to any one he may designate.

A Committeeman. The contract is awarded but not yet approved.

Mr. Henderson. Then the contract having not been concluded, I ask to put in my bid for an engine.

After considerable discussion the committee [illegible] to adjourn sine die, no action being [illegible] the matter.

A New Spring Discovered.—The Chief Engineer of the Water Works has discovered, near the steamboat landing at Fairmount, a strong spring of cool, refreshing water, bubbling from a rock at this point, which has been covered by the earth; by drilling the rock a stream of water came rushing out, which proves to be of an excellent quality. It is to be fixed, so that visiters to Fairmount may refresh themselves with the long hidden treasure. The Chief thinks there is another on the side of the hill, and an effort will be made to bring its waters to light and public use.

11

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until this morning at 10 o'clock.

COMMENCEMENT OF OPERATIONS AT THE BELMONT WATER WORKS—THE WATER PUMPED INTO THE NEW RESERVOIR, NEAR GEORGE'S HILL.—The water was yesterday introduced into the eastern basin of the new reservoir now being constructed in the Park, near George's Hill. The Water Committee of Councils were present to witness the starting of the engines and their performance, which proved entirely satisfactory. The portion of the reservoir which is now receiving water, is the lower half of the eastern basin which has been completed and walled with brick to about two-thirds of its entire depth. The storage capacity, as far as at present completed, is about twelve million gallons. This basin, when finished, will hold seventeen million gallons, and the other one twenty-seven millions, making a total capacity for the entire reservoir of forty-four million gallons. This large reservoir is located on very high ground, and will supply water to the highest portion of the city.

A large force of workmen are employed on it, and it is being pushed to completion as rapidly as possible. The bank around the basin, into which water has been pumped, is of course finished to the top, but a description of the mode of building the embankment may not be uninteresting. The dirt is dug from the bottom of the basin and hauled upon the bank in carts; here it is spread out in layers six inches thick, when it is rolled, first with a grooved or corrugated roller, which breaks up all lumps; after this it is sprinkled with water, and then rolled with a very large and heavy flat roller, packing it very tight. The surface of the bank is kept hollow all the time, so that any rains that may fall assist in packing and solidifying the earth. The bottom is of solid rock, and the sides are lined with three feet of tough clay, on which are five inches of mortar, and over all a lining of hard burned bricks.

The outlets are so arranged with gates, that either or both of the basins may be used at one time, and have wooden screens to prevent the admission of fish or other floating debris to the pipes. The reservoir is intended to supply the high ground in the Fifteenth, Twentieth and Twenty-eighth Wards, which has been for a long time troubled with a scarcity of water. A thirty-six inch main will be laid across the Schuylkill on the bed of the river to supply the wards on this side, and a twenty-four inch from the reservoir to Belmont avenue, thence to Lancaster avenue and thence to Fortieth street. Gates and other fixtures are provided, by which outlets for three thirty inch mains can be had at any time when it may become necessary.

The pump-house is of pressed brick, and stands on the river bank close to the old Belmont Cottage. It contains a large engine, known as the Worthington Duplex Engine. The same engine is in use at Charlestown, Cambridge, Salem, Newark, and several other cities. The steam cylinders, two in number, are of the compound sort, being both high and low pressure. The power is about two hundred and fifty horses. The pumps are double-acting, 22 inches in diameter and 4 feet stroke. The surveyed height at which the machinery is working is 215 feet; the indicator pressure at the pumps is about 85 pounds per square inch and they are guaranteed to deliver five million gallons in twenty-four hours, at which rate they are now running.

There are to be two more engines of the same capacity. One of them is now nearly completed.

In the boiler room there are twelve large "mud leg" boilers, fed by the Worthington Duplex Feed Pump, of the same construction as the pumping engines.

12

SUNDAY TIMES.

PHILADELPHIA, OCTOBER 16, 1870.

13

PHILADELPHIA MECHANICS AWAKE

There is at last a reasonable hope of the water ring in Councils being broken, or at least receiving a blow from which it can only with difficulty recover. Strengthened by our exposures of the favoritism so long exercised in the Water Department, to the detriment of Philadelphia mechanics, "The Hydraulic Works," of this city, invited Councils to examine their patent duplex pumping engines, which have been built for the use of water works now in course of erection, but not under the care of Frederick Graeff, or the pumps for them would not have been constructed in this city. The pumping engines in question can be furnished cheaper than those built by Graeff's pet, Worthington, of New York. They are more effective, less liable to get out of order, and more economical in every way. We trust that every member of Councils gave these pumps a fair and thorough investigation. It certainly was their duty so to do—and it is equally their duty to enlighten their constituents on the merits and demerits of the duplex pumps, before voting any more money for the benefit of the too long patronized New Yorker.

The duplex pumping engines may not be all that their builders claim. It is certain, however that better machinery can be procured in this city than in New York, and at lower figures. It is high time that the claims of Philadelphia machinists were recognized, and all our engine builders should urge their claims as the proprietors of the Hydraulics have done. By so doing, they will awaken public attention to the gross injustice so long done Philadelphia mechanics, in providing valuable machinery for our Water Department.

159

DOORS TO CORRESPO DENTS.

aff and the $2,122,000 Appropriation.

HILADA. INQUIRER:—A communication appeared in one of our morning papers attempting to explain away why Mr. Graff refuses to make public his estimates in detail for the building of the new reservoir in East Park, giving as a reason that the work is of considerable magnitude, and is calculated to hold 750,000,000 gallons of water, that Mr. Graff proposes to superintend the work *himself*, in order that he may *be able to guarantee the work well done*, and that, *if done by contract, the work would be imperfectly performed, and much of the labor and responsibility would be taken off Mr. Graff's shoulders*, &c., arguments, I feel assured, that would not be made by the chief himself, because he, or any other practical engineer or contractor, knows from experience that contractors are bound up by contract in the usual way, and embodied therein are the specifications drawn up in detail by the engineer-in-chief, specifying how it must be done, item for item, and that, too, under a penalty and in addition to the security required of contractors, there is a percentage retained from them monthly, usually about one-sixth of the work done up to the time of taking estimates; and further, the engineer-in-chief reserves to himself the right, at any time, should his directions not be complied with, to have such neglect rectified at the expense of the contractor; and further, that in case of any dispute arising between contractor and engineer, the right is reserved to the engineer, and agreed to between the parties, that he (the chief) is the sole arbiter, and that, too, without further appeal, his decision being final and conclusive. So, it can easily be seen that it is to the interest of the contractor to fully comply with the directions of those having charge of the work, and, consequently, D. R.'s argument falls to the ground. Now, should there be any defect in the work, the blame should rest on those in authority, in not having the *strict fullfilment of a plain contract fully complied with*, and more particularly so, when the parties contracting are fully and completely held.

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This is the manner that all large and well managed corporations have their work performed, and it cannot be doubted but that it is well done, and in many cases of large magnitude, and performed, too, with economy. Any contractor, if he be an experienced and responsible one, knows well what he undertakes, and shapes himself accordingly. Why should not all of the city's large and heavy work be prosecuted in like manner, and not have the appropriations called for, and a business-like estimate differ so widely.

We have many specimens of contract work at our own doors. Among them stands Dr. Jayne's buildings. Academy of Music, Continental Hotel, First National Bank building, Philadelphia Savings Fund, Chestnut street, South street, and Connecting Railroad bridges, the Roman Catholic Cathedral, &c.; as also we have many fine specimens outside of the State, such as railroad tunnels and bridges too numerous to mention, and among the improvements stands the lake tunnel of Chicago, *which was built (in strict accordance with plans furnished by the engineer in charge)*, by a Pennsylvania contractor, named James J. Dull, a resident of Harrisburg, and at prices, too, that many pred ted his failure, as work of that character bei ovel among contractors, and by the side he building of a reservoir is of but

TAX PA

CAL INTELLIGENCE.

ANALYSIS OF SCHUYLKILL WATER.

IT IS AS PURE AS IT WAS IN 1842.

2

Mr. Francis C. Phillips, an attache of the editorial laboratory of the American Exchange and Review, has recently made an analysis of the Schuylkill river water, with a view of ascertaining how far its composition has changed since the analysis made in 1842, by Prof. Boye. The result is appended in connection with that obtained by Prof. Boye, as well as with one showing the composition of the Croton river water. This last analysis, introduced for the sake of comparison, is a recent one made by Prof. Chandler, of Columbia College. The figures express grains and decimals per wine gallon of 231 cubic inches:

	No.1.	No.2.	No.3.
Chloride of sodium	0.4870	0.153	0.402
Sulphate of soda	0.4798	0.560	9.260
Sulphate of potassa	0.4315		0.179
Carbonate of soda		0.185	
Sulphate of lime	0.2879	.....	0.158
Carbonate of lime	1.5623	2.190	1.648
Carbonate of magnesia	0.6019	0.484	0.991
Alumina and oxide of iron	0.0934	0.077	trace
Silicic acid	0.2979	0.395	0.670
Total grains inorganic matters	4.2417	4.044	4.259
Organic matters	0.2570	0.036	0.670
Total grains solids	4.4987	4.080	4.929

Analysis No. I is of the Schuylkill river water, April, 1870; No. II is the old analysis by Boye, and No. III is Chandler's analysis of Croton water. This recent recent result shows but a trifling variation in the composition of the water of Philadelphia since the year 1842, though at one time—during the summer of 1867—the amount of organic matter had temporarily increased to the inordinate amount of but little less than four grains per gallon, whilst the mineral matters remained nearly the same.

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The amount of organic matter is, contrary to what might be expected, somewhat less in the case of the Schuylkill water than in that of the Croton, while the inorganic or mineral matters are almost the same in quantity, differing only in the fact that the Philadelphia water contains relatively more sulphates than the New York. May not this be due to the origin of one river the coal region?

Phila: Post
Jan: 18/71

WATER SUPPLY.

3

AN IMPORTANT SUGGESTION.

Eighteen months ago we were visited by a wide spread and long continued drought, the duration of which, it may be safely asserted, was without parallel in the history of our city. We all remember how sensibly all classes of our citizens were affected by the indisputable fact; their health, property and very lives were endangered if something did not speedily intervene and avert the impending calamity of a water famine. But happily prompt measures were devised, and we were spared the greater inconveniences incident to such an event.

To-day the cry for water is sent up from nearly every city in the land. New York has repeatedly been compelled to hoard her resources in this department; an appeal has been made to the clergy of Brooklyn requesting that they invoke Providence to open the flood gates and pour forth the welcome element to a thirsting people. At Boston, the manufacturing interests have been notified that, unless rain should speedily relieve the demand upon the storage lake, their supply would be cut off after to-day, thereby throwing out of employment tens of thousands of operatives. The works of Jersey City have for a time been rendered almost unavailable owing to an unforeseen mishap; and so from all parts of the northern section of the country these deplorable accounts reach us.

When we turn again to our own city there is just cause for thanks, for have we not been spared like inconveniences. This is not owing to a more favorable condition of the weather, but that our water department is gradually attaining a standard commensurate with the requirements of this great city.

The Chief Engineer in his report of last year, in connection with many valuable suggestions, urged the importance of constructing a large storage reservoir, of a capacity sufficient for a month's supply. He proposed to erect the same in East Fairmount Park, the site of which is admirably suited for a work of this magnitude. The suggestion is worthy of all attention.

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from Market street is completed.

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The Delaware Water Works.—The work of cleansing out the basins connected with the Kensington Water Works, has been completed, but the water has not been let in yet, to but one of the reservoirs. The Chief Engineer of the Department does not believe the cleansing of the basins will altogether prevent the water in them from becoming at times unfit for use, as the difficulty does not originate from the mud at the bottom of the reservoir, but from the character of the water at the point where it is taken from the Delaware. He recommends some alterations in the inlet, as the mouth of the trunk through which the water passes, is entirely too low; also, that the pier should be extended and a new inlet from the river constructed. The extension of the pier of the Lehigh Coal Company, the same distance into the river as that belonging to the city, causes the emptyings of sewers and other filth, to flow in between the piers and then be taken up through the trunk to the basin.

High Prices of Country Produce.—Farm produce has seldom sold so high at this season of the year as now, especially all kinds of meat and butter. Paper money is as abundant as it ever was, and, of course, prices of all things paid in it advance just as the value of the money depreciates by increasing its quantity. Prime pieces of beef for roasting bring 16 cents the pound; mutton 14 cents, which is higher than it has been for years; veal, 10 and 12 cts.; butter brings from 37 to 40 cents the pound, and very little prime at that; grass butter, usually looked for at the close of April has not yet made its appearance, unless in very small quantities; early vegetables also bring high prices, owing to the backwardness of the season.

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with them in others.

WATER RATES IN BOSTON.—The followidg rates for the Cochituate water in Boston have been established, to take effect on the 1st of January:—

The rates for model houses, so called, shall be, viz:—For each tenement having water fixtures within the same, $3 annually; and for each tenant not having water fixtures within the same, but taking the water from general fixtures, used in common with other tenements, $2; and in addition to the foregoing rates there shall also be charged for each such tenement, in which a water closet or bathing tub is used, $3 annually.

For bakeries, the average daily use for each barrel, the sum of $3 per annum, provided that in no case shall any bakery be charged less than $6.

The following rates have been established for all manufacturing and other business requiring a large quantity of water:—

Average daily quantity	500 gals. or less	6c.	per	100 gals.
" " "	500 to 1,000 gals.	5¾	"	"
" " "	1,000 to 2,000 "	5½	"	"
" " "	2,000 to 3,000 "	5	"	"
" " "	3,000 to 4,000 "	4¾	"	"
" " "	4,000 to 5,000 "	4½	"	"
" " "	5,000 to 6,000 "	4	"	"
" " "	6,000 to 7,000 "	3¾	"	"
" " "	7,000 to 8,000 "	3½	"	"
" " "	8,000 to 10,000 "	3	"	"

When the quantity used exceeds 10,000 gallons per day the price shall be fixed by the Water Registrar, but in no case at less than two cents per 100 gallons.

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PROPOSALS.

PROPOSALS FOR CAST IRON MAINS FOR THE WATER DEPARTMENT.—Sealed proposals will be received at the office of the Water Department, No 104 South FIFTH street, until April 14, 1868, at 3½ o'clock P. M., for the following cast-iron mains:

200 lengths of 12 feet each, of 10 inch internal diameter; average weight 750 pounds each, marked A.

130 lengths of 12 feet each, of 12 inch internal diameter; average weight 980 pounds each, marked A.

115 lengths of 12 feet each, of 16 inch internal diameter; average weight 1260 pounds each, marked A.

1250 lengths of 12 feet each, of 20 inch internal diameter; average weight 1815 pounds each, marked A.

112 lengths of 12 feet each, of 20 inch internal diameter; average weight 2675 pounds each, marked A.

860 lengths of 12 feet each, of 20 inch internal diameter; average weight 1815 pounds each, marked B.

350 lengths of 12 feet each, of 30 inch internal diameter; average weight 3464 pounds each, marked B 1.

100 lengths of 12 feet each, of 30 inch internal diameter; average weight 3800 pounds each, marked B 2.

190 lengths of 12 feet each, of 36 inch internal diameter; average weight 4600 pounds each, marked C 1.

100 lengths of 12 feet each, of 36 inch internal diameter; average weight 4900 pounds each, marked C 2.

With the curves, branches and sleeves necessary for laying the same.

The 10, 12, 16 inch mains, marked A, are to be delivered at Manayunk.

About one half of 20-inch, marked A, are to be delivered at Manayunk.

About one-half of 20-inch, marked A, are to be delivered at or near Mt. Airy Station, Germantown Railroad,

The 20-inch, marked B, are to be delivered at some convenient wharf on west side of the Schuylkill.

The 30-inch, marked B, are to be delivered on Schuylkill, near foot of Montgomery avenue.

The 36-inch, marked C, are to be delivered at or near Schuylkill Engine House or Schuylkill Reservoir.

Subject to such changes in points of delivery as may be found necessary hereafter.

No payment will be made for any metal in the pipes, braches or curves exceeding five per cent. above the specified weights, and no pipes will be received that are more than five per cent. under the weights named.

All the pipes to be cast vertically, with the bell end down.

All the pipes, branches, curves and sleeves are to be coated with coal pitch varnish, in accordance with the memorandum to be had at the office.

All the pipes and castings to be subjected to the tests named in the general specifications of the Department, said tests to be made at the expense of the contractor.

The proposals must state the minimum time required for the delivery of the whole contract, and the earliest date at which deliveries can be commenced. Bids will be received for a part or the whole, but if for a part, must include all the pipes of any one of the classes named above.

All mains of twenty inches diameter and under will be proved to pressure of 300 pounds per square inch, all others 250 pounds per square inch.

No proposal will be received unless written upon the blank forms furnished by the Department.

The price must be named per pound.

No bids will be received except from persons manufacturing the articles bid for, and unless it be accompanied with a certificate that a bond of five hundred dollars has been deposited with the City Solicitor, as per ordinance of May 25, 1860.

The committee reserve the right to accept or reject any or all of the bids.

FRED GRAFF,
Chief Engineer Water Department.

A IL 7, 1868. 10-3t

AN ATTEMPT TO GALVANIZE.—During the course of a debate in Common Council last week upon a bill proposing to make an appropriation of $53,400 to the Department for Supplying the City with Water, Mr. Evans, of the Fifteenth ward, took occasion to laud the merits of that gross humbug, Birkinbine, ~~formerly Chief Engineer of the Water~~ Department. Assuming that there were objections to Mr. Graff, in consequence of the trials and misfortunes of last summer, Fighting Bob undertook to blow the horn of Birkinbine, who we may presume is his candidate for Chief Engineer of the Department. Birkinbine was dropped by City Councils some years ago, after having, by a series of failures, demonstrated his unfitness for the position which he held, and after having, by his blunders, run the city into large expenditures of money without effect. A great portion of the time of his successor has been taken up in attempting to remedy the consequences of his errors; and the scarcity of water which was felt last summer might have been avoided by measures that could have been adopted during Birkinbine's time, and might have been finished ere this, if he had had sufficient scientific skill to comprehend their value. The idea of resuscitating Birkinbine in the chief engineership is preposterous. If it is true, as the enemies of Mr. Graff now say, that *he* is a failure, what a stupendous, unapproachable failure Birkinbine must be!

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New Cornish Engine.

We learn from the *Press* (Philadelphia) that the Cornish engine just started to work at the Schuylkill Works differs from the ordinary Cornish engines in having the heavy lever beams placed down upon each side of the cylinder, with their bearings resting directly upon the bed-plate and stone foundation, instead of over the cylinder, in the usual manner.

By this plan much greater stability is secured, and expensive alterations and additions, which would have been necessary with the ordinary form of engine, were avoided.

The size of the steam cylinder is 72 inches diameter and ten feet stroke, and the pump plunger is 36 inches diameter and ten feet stroke. The beams weigh about 28,000 pounds each, and the load in the plunger is about 60,000 pounds. This machine is capable of raising 7,500,000 gallons of water per twenty-four hours.

The action of the engine is peculiar. The steam is admitted upon the top of the cylinder, and after the piston has passed through about one-third of its stroke, the steam is cut off, the rest of the stroke being made by the expansion of the steam in the cylinder. The plunger has now been raised to the top of its stroke; a valve is then opened allowing the steam on the top of the piston to pass to the underside of it, thus putting an equal pressure on both sides of it, and allowing the plunger and its weight to fall by its own gravity and thus force the water to the reservoir. It will be seen that this plunger must, therefore, be heavy enough to lift the load of water in the main, and also to overcome the friction of the water in the pump and pipes.

The engine was designed by the Chief Engineer of the Water Department, Frederick Graff. In order to be able to make the contractors for the building of the engine (Messrs. Merrick & Sons) entirely liable, they were intrusted with the design, for the details of parts, and are by their contract held responsible for the strength and proportions of these details. The engine is a splendid specimen of massive machinery, and reflects great credit upon Mr. Graff and Messrs. Merrick & Sons. The water is forced into the stand-pipe at the works, and thence through a main 36 inches in diameter and 312 feet long to the reservoir.

The engine is at present worked by the old boilers. The appropriation for the new set of boilers intended for her was delayed more than eight months by the refusal of the Democratic members of Select Council to vote for the loan asked for their erection. They are now in place at the works, and will be put into use in a few weeks.

CITY INTELLIGENCE.

SPICY.

Graeff Finds Fault with Birkinbine's Work—The Latter Demands an Investigation.

The following interesting communications explain a rising unpleasantness between the present Chief and the ex-Chief of the Water Department:—

To the Editor of The Evening Telegraph.

NO. 152 SOUTH FOURTH STREET, PHILADELPHIA, March 16, 1871.—Dear Sir:—The following letter has been addressed to Frederick Graeff, Esq., Chief Engineer of the Water Department, to which he has failed to respond. From Mr. Graeff's official position the charges and implications referred to have a damaging effect upon the reputation as an engineer which I have gained by long experience and close attention. I simply ask an opportunity of refuting them before a properly authorized committee.

Respectfully, H. P. M. BIRKINBINE.

PHILADELPHIA, March 3d, 1871.—F. Graeff, Esq., Chief Engineer of Water Department:—In almost every communication you have made to Councils, or published officially, you have found fault with the work done under my administration as Chief Engineer of the Water Department, or that which was in progress when you took charge of the department. However these statements may advance your personal interest, from your official position they have a damaging effect upon my reputation. Mere assertions on your part, and contradictions on mine, can answer no good purpose, and will only result in destroying confidence in one or both of us. I, therefore, make the request that you join me in asking either the Committee on Water, or Councils, to appoint a special committee to investigate the verity of the statements referred to, and also my communication addressed to Councils October 17, 1867, in answer to your earlier reports.

The questions at issue between us are not only of personal interest, but concern the city; for, if my recommendations were right, and the work in progress judiciously planned, you have sacrificed the interest of the city in the changes you have made, and will sacrifice it still further. If you are right, the confidence so long reposed in me was a mistake, and whatever measure of success attended my administration, or the works constructed by me, was purely accidental, or must be attributed to other causes than myself; and it would be but proper that my true character and standing as an engineer should be known to the public. Until this is done, I can but assert that you have been mistaken in the changes made and proposed to be made, and refer to the result of my administration, and the works constructed by me, as an answer to you.

HENRY P. M. BIRKINBINE.

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Dupe

ANALYSIS OF SCHUYLKILL WATER.

IT IS AS PURE AS IT WAS IN 1842.

Mr. Francis C. Phillips, an attache of the editorial laboratory of the American Exchange and Review, has recently made an analysis of the Schuylkill river water, with a view of ascertaining how far its composition has changed since the analysis made in 1842, by Prof. Boye. The result is appended in connection with that obtained by Prof. Boye, as well as with one showing the composition of the Croton river water. This last analysis, introduced for the sake of comparison, is a recent one made by Prof. Chandler, of Columbia College. The figures express grains and decimals per wine gallon of 231 cubic inches:

	No.1.	No.2.	No.3.
Chloride of sodium	0.4870	0.153	0.402
Sulphate of soda	0.4798	0.560	9.260
Sulphate of potassa	0.4315		0.179
Carbonate of soda		0.185	
Sulphate of lime	0.2879	.....	0.158
Carbonate of lime	1.5623	2.190	1.648
Carbonate of magnesia	0.6019	0.484	0.991
Alumina and oxide of iron	0.0934	0.077	trace
Silicic acid	0.2979	0.395	0.670
Total grains inorganic matters	4.2417	4.044	4.259
Organic matters	0.2570	0.036	0.670
Total grains solids	4.4987	4.080	4.929

Analysis No. I is of the Schuylkill river water, April, 1870; No. II is the old analysis by Boye, and No. III is Chandler's analysis of Croton water. This recent result shows but a trifling variation in the composition of the water of Philadelphia since the year 1842, though at one time—during the summer of 1867—the amount of organic matter had temporarily increased to the inordinate amount of but little less than four grains per gallon, whilst the mineral matters remained nearly the same.

Further, this analysis shows that, despite the proximity of numerous manufacturing establishments, the Schuylkill river water is equally as pure as, and differs in no very essential particular from that brought from the various branches of the Croton river in Westchester, Putnam, and Duchess counties for the use of New York city.

The amount of organic matter is, contrary to what might be expected, somewhat less in the case of the Schuylkill water than in that of the Croton, while the inorganic or mineral matters are almost the same in quantity, differing only in the fact that the Philadelphia water contains relatively more sulphates than the New York. May not this be due to the origin of one coal region?

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tons the storm of yesterday week came on. This being more general in its character, a heavy freshet occurred, the same bank was again washed away, and the forebay at the Spring Garden Works filled to the top with sand and gravel. It was found on measuring this deposit that it amounted to 3500 cubic yards. A large number of men have been employed in removing the gravel since last Friday, but there is still three or four feet of it remaining. By cutting a channel through it the Chief Engineer has been enabled to start the Cornish engine, but cannot run it regularly. The reservoir connected with these works is about 16 feet deep, and yesterday there was but three feet of water in it.

The damage to the Spring Garden works would not, however, have affected much the supply of water had it not been for the unusual and almost unprecedented high tides in the Schuylkill, which flooded the wheel houses to the depth of six and eight feet, thereby stopping all the pumps, upon which the supply depended. This stoppage continued almost twenty-four hours, while the water stored was being drawn out. As soon as this difficulty had been overcome, and the wheels started, a break occurred to the lining of the Corinthian avenue basin, which prevented any more water from being pumped into it.

This break was fortunately discovered in time to prevent, perhaps, the entire destruction of the reservoir; and by having men employed night and day, the damage is nearly repaired. To prevent any similar disaster, a frame-work, 13 by 48 feet, filled with cement and bricks, has been constructed and placed inside the reservoir, in a position to receive the water as it falls from the 48-inch main, the mouth of which rests upon the top of the reservoir. A retaining wall of heavy stone is also being placed on the outside, where a large portion of the embankment had been washed away.

The Corinthian avenue basin holds water to the depth of 25 feet, but in consequence of the difficulties which we have enumerated, the quantity has been reduced to less than seven feet. By to-morrow all the repairs will be completed, when the work of again filling the reservoirs will be commenced.

It was in consequence of this state of things that notices were served on the manufacturers of the city to stop using the water until Monday next, and also cautioning our citizens generally to cease from washing pavements or wasting the water in any way. The notice was ordered to be sent to all establishments, but, by some oversight, a number of parties did not receive any word.

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PATENT PUMP.

PHILADELPHIA, May 9, 1871.—To the Select and Common Councils of the city of Philadelphia: Having demonstrated to your honorable bodies the practical working of our patent compound propeller pump, and being convinced that by its introduction an ample supply of water at all times can be furnished to the city with the elevation requisite and at a reduced cost for the same, we, therefore, respectfully propose to construct works to supply the city with water on the following terms and conditions, viz:

The city of Philadelphia to furnish the location, and a conduit from their present forbay or elsewhere, to supply the pumps with water, and to connect their mains to the outlets of said pump for distribution, we to furnish pumps and buildings for the same, engines and engine houses, boilers and boiler houses, all to be constructed of the best materials, and in the most substantial and reliable manner, and to be of such a character as will be an ornament to the city, and reflecting the best engineering skill, and to have a full capacity of fifty million gallons of water per twenty-four hours, to an elevation equal to the level in the contemplated Park reservoir, and to lift a greater number of feet pounds of water per hundred pounds of coal used than is now being done at any of the city works.

The plans and specifications to be submitted to any committee or Board of Engineers that may be appointed or selected by Councils to superintend the erection of the works; said committee or Board of Engineers to have the power to modify the plans and specifications, provided that such modifications shall not increase the cost as per plan presented without such additional cost be added to our estimate.

The cost of said works complete to be two and one-half millions of dollars, of which seventy-five per cent. is to be paid monthly as the work progresses under the direction of the said committee or Board of Engineers, and twenty-five per cent. to remain until the work is completed and proves equal to the capacity guaranteed.

Our system of pumps will require no reservoirs, and we can use or dispense with those the city have now in use.

In case our proposition should meet with a favorable reception, and the city desire to make use of one of our pumps before the completion of the works above contemplated, we make an additional proposal that there shall be appropriated by the city a sum sufficient for us to erect a pump at Fairmount or elsewhere, using the present power now employed there (if sufficient), and forcing such an amount of water into the basins as may direct, guaranteeing to lift a gre number of foot pounds of water per dred pounds of coal used than is being done at any of the city works.

The cost of this pump to be paid for by the city after we have put it in successful operation according to our guarantee, or in the event of a failure, to be removed at our own expense, and in that event any contract we have made with the city to be void.

Security to be given for the proper completion of the contract. Your obedient vants,

Signed for the Company.

rred to the Committee on Water.
ones made a report from the Committee, with reference to g and paving of Lehigh ave-

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AT LAST.—Common Council have appointed a committee to investigate the manner in which a contract was awarded to Mr. Worthington, of New York, to erect a pump for the Roxborough Water Works. Many of our Philadelphia mechanics affirm that there was a "job" in this for somebody, and that bids from our own mechanics were unheeded. Let us have the facts. Philadelphia skill and workmanship should not be ignored in our public works, and this slighting of our mechanics, who rank among the first in the world, should not be tolerated without excellent reason.

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$4000 for the use of a single steamer. 'Tis true, they claim to throw 5,760,000 gallons every twenty-four hours; but how they can force such a quantity through a six-inch pipe in the space of time mentioned rather staggers our mathematical calculations. Nine of our steam fire engines would force over five million gallons through single streams, and six would do it with ease using two streams. The cost of coal and food would be about $60 or $75 *per diem*. This would make a difference to our tax-payers of $325 per day.

Whilst we are making these comparisons we must in justice state that the owners of the tug do not engage in this operation as a matter of profit to themselves, but look upon it rather as a test, and whilst their price may seem large, their expenses are heavy. They have nine hands employed, the chief engineer being paid $150 per week, the captain the same, the assistant engineer $75, first fireman $50, second $40, steward $55, first deck hand $50, and second and third $40 each. This foots up $650 per week, independent of coal, wear and tear of machinery, etc. The New York Fire Department pay

Dupe

The Power of Locomotives

The old fashion of rating steam engines as of a certain nominal horse power depending on the size of the cylinders alone, was established at a time when the pressure of the steam was almost uniformly low, and never conveyed a very definite idea of the actual work performed even under those circumstances. Of late it has become common to include in the estimate of power all the conditions affecting the engine, such as the speed with which it works, the pressure of the steam in the boiler, the expansion in the cylinder, etc. This is *actual* horse power, and can be reckoned very closely by the employment of suitable apparatus in any given case. In some experiments lately made on the New York and Erie Railroad, it was found that a common broad-gauge locomotive in good order could pull with a force of about 14,000 lbs. on the couplings connecting it with the cars, and could continue to pull steadily with that amount of strain until the speed reached about 15 miles per hour. Above that velocity the ability to pull gradually diminishes, until at somewhere from 40 to 80 miles per hour the machine becomes able only to move itself without any train. Mr. Henry Waterman, of this city, who is conducting a series of experiments on this and kindred points, employing better apparatus and expending more care than in any previously made, finds that the greatest mechanical effect of an ordinary locomotive is at about the speed of 15 miles per hour, and in one case, at least, has actually found the boiler to continue to generate steam in sufficient quantities to maintain the pressure while the locomotive was moving at that speed, and pulling with an average strain or force of a little more than the amount above stated. This makes the actual power of that locomotive 560 horse power, without including the power necessary to overcome the resistance to its own motion. This will, we feel positive, be considered an extraordinary result even by those most familiar with the subject. It should also be remarked that the amount of adhesion is, in this instance, considerably greater than is given by the results of the older experiments on a smaller scale. The adhesion, or the resistance to the slipping of the wrought iron tires upon the wrought iron rails, was in these instances more than one-third of the weight upon the driving wheels. It is needless to say that the rails were in these trials perfectly dry, but no sand was applied to increase the adhesion.

NEW YORK, April 14, 1858. T. D. S.

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take place on the track.

The trial of steam fire engines took place in the afternoon, and the display appeared to divide the attention of the immense throng of visitors, fully one half of those on the ground being spectators of the contest. The propeller of the Southwark steamed out to the ground early in the day, and the Weccacoe and Good Intent were promptly in attendance before the hour fixed for the trial, two o'clock. Owing to some impediment in attaching the leading hose, the Southwark, which was the first announced to play, moved out of her position, and the Good Intent led off. She was followed by the Weccacoe, and after she had finished, the Southwark, having completed the connection, commenced to play her allotted time. Each engine was in operation twenty minutes, counting from the time of getting up steam. The builders of all these engines were present, either superintending or overlooking the operations, and Mr. Lee, one of the builders of the Southwark, personally assisted the engineer in running that machine. The Judges of the trial, Messrs John C. Cresson, A. M. Eastwick and Peter Fritz, personally tested the nozzles with inside calipers, made the measurements and kept the records of steam and air pressure, making observations of the general working of each engine. The following statement, from the record kept by the Judges, gives the result:

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Good Intent Engine.—In 14 minutes, 20 seconds from time of lighting the fire, the engine started, with 35 pounds of steam. In 5 minutes after, the steam guage showed 63 pounds, air pressure, 110 pounds. In 10 minutes after, steam 75 pounds; air, 125. In 15 minutes after, steam 77 pounds; air, 130 pounds. In 20 minutes after, steam, 90 pounds; air 142. Maximum steam pressure, 95 pounds. Length of hose used, 219 feet 2 inches; nozzle, one inch full. Distance played—horizontally, 169 feet 3 inches, main body of water; farthest distance the smallest amount of water was thrown, 193 feet; perpendicularly, 143 feet. Builders, Reany, Neafie & Co., Philadelphia.

Weccacoe Engine—In 14 minutes 15 seconds from time of lighting fire, engine started with 50

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.e water-power of the Delaware is also fully .pied by the canals and manufactories as as Easton. The site, "New Hope," suggted is distant from the city forty miles by e most direct line of conduit. The area drained into the Perkiomen Creek, above the dam, which I recommended the city to construct, is two hundred and twenty square miles, giving a daily average flow of two hundred and forty million gallons. The minimum flow in seasons of drought is forty million gallons per day, and the available storage capacity of the dam is five billion gallons.

In meeting the present requirements of the city the lake would not be drawn upon, as the minimum flow of the stream would supply the demand. This lake would not be exhausted in two months, as "H." states, but it would furnish more than seventy-five million gallons per day during a protracted drought of four months' duration.

To increase the power of Fairmount by impounding reservoirs, so that an additional amount equal to the storage capacity of the proposed lake could be pumped, would require fifteen lakes of equal capacity, costing at least $7,500,000, or if the same amount was pumped into reservoirs at the same height that water could be delivered from the Perkiomen, twenty such reservoirs would be required, costing fully $10,000,000. Your correspondent gives the cost of pumping a million gallons at Fairmount as two dollars; this only includes attendance and necessary repairs, but does not exhibit the interest on the cost of the dam, water-rights damages, rebuilding dam and works, &c. Nor does it consider the large expense required to make the proposed improvements, if practicable.

The estimated cost of the aqueduct from the Perkiomen with a capacity of delivering one hundred and fifty million gallons per day was $250,000 per mile, the distance, twenty-six miles, making the entire cost of conduit $6,500,000.

If "H." will take the above facts and apply them correctly he will demonstrate that there is no plan by which the city can be as cheaply supplied with water as by gravitation.

H. P. M. BIRKINBINE.

The following letter from the Mayor was also read:

August 31, 1871.—*Frederick Graeff, Esq., Chief Engineer of the Water Works*—MY DEAR SIR: . Yours of the 28th instant, in relation to the bill making appropriations for water purposes and to my veto message thereon, is before me, and, although I can scarcely spare time from my other duties to go over the matter again, my regard for yourself, and the fact of your feeling personally affected by the message, induces me to say a few words in reply.

I need hardly say that in the preparation of the message I contemplated no such thing as individual reflection upon yourself, and, indeed, on recalling it to mind, I cannot think of anything contained in it that ought to bear any such impression; neither do I realize anything in connection with the bill or the action of Councils in regard to it that should make you responsible either for its passage or defeat, much less tend to the idea that if passed the discretion would be improperly exercised by you.

My message was but a respectful difference of opinion between Councils and myself only; it was a fair criticism of a proposed ordinance of an unusually large appropriation of money (substantially nine different appropriations), merely mentioning the objects and specifying the amount for each, with no words of explanation, several of them, in my judgment, being susceptible of much more particularity of detail, as is required by law; and further, believing the contract system best for the interests of the city, I feel it my duty, in a respectful manner,

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THE STEAM FIRE ENGINE GOOD WILL.—A trial of this apparatus took place on Thursday morning, near the engine house, Race street, below Broad, under the superintendence of the builder, Mr. Alexander McCausland. With 70 pounds of steam she played through 50 feet of hose and a scant 1¼ inch nozzle, 242 feet, counting from the nozzle, as measured by the members; but Mr. Joseph Parry, the builder of other steam fire engines, measured it 238 feet. Through 365 feet of hose, ⅞ nozzle, she threw water 185 feet, and through 450 feet of hose, same sized nozzle, 173 feet. She was supplied from the new Birkenbine plug, recently put down. This is the best playing ever made by this machine, it having been materially improved since the former trials. The engine weighs 7650 pounds, with water in the boiler. It is now in service, and will be taken to fires by hand for some time till the Company procure horses.

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The Press.

FRIDAY, SEPTEMBER 1, 1871.

WATER.

Statement of the Chief Engineer.

A few days ago a special meeting of Councils was called by the Mayor, at which that official submitted a message vetoing the ordinance making an appropriation for the extension of the Water Works. The message appeared in full in these columns, but a brief abstract was all that could be obtained of the communication presented by Chief Engineer Graeff. That the public may understand the position assumed by the Chief, we present the statement in full:

GENTLEMEN: Learning that Councils have been called together to-day to receive a communication from the Mayor of the city, with some objections to at least one of the items of the appropriation bill recently passed by your honorable body, I ask leave to present to your notice a few of the facts which have induced me to propose the expenditure of an amount of money which may at first glance appear large, but which, when the importance and necessity for such expenditure and its trifling cost per capita of our population is considered, will be admitted as comparatively a small item.

The amount referred to is for the construction of a reservoir, upon an exceedingly desirable position in the East Park, which will be capable of storing a sufficient quantity of water to secure the city from disaster and inconvenience caused by drought, inadequate machinery, or accident thereto.

In 1854, just after the consolidation, when I had the honor to be the Chief Engineer of the works, I called the attention of Councils to this serious want in the water system of the city; since that time Messrs. Ogden, Cassin, and Birkinbine have each warned the city of the difficulties it is subjected to in consequence of inadequate storage.

In several of my reports made since my return to the charge of the works in 1867, I have urged upon you this great necessity, a necessity which of course becomes more and more apparent every year, every day, every hour, as the immensely increased demand for water takes place.

The total capacity of the reservoirs now in use in that portion of the city which the new reservoir is intended to relieve is 83,392,636 gallons *when full*, whilst the actual quantity of water delivered to the same district in July of last year is 49,914,229 gallons per day. It will therefore be seen that the entire capacity of the reservoirs, *when full*, is only equal to one and five-eighths of a day's demand, an amount of storage so trifling, that the water delivered to our citizens can scarcely be said to do more than pass through the reservoirs, just as though they were merely enlarged mains.

The disadvantage, the danger of this must be apparent to the most careless observer; a freshet in the Schuylkill, or low water upon the dam, which prevents the working of the machinery for a single day, and the water in the reservoirs is reduced so low that weeks are required to refill them to their proper level, even if no large fire or extraordinary demand occur during the interval.

The following statement of the condition of the reservoirs on Saturday last may be taken as an illustration of the condition the works are in in this particular: →

AN ORDINANCE AUTHORIZING THE Chief Engineer of the Department for Supplying the City with Water to contract for the construction and erection of two pumping engines for the Twenty-fourth Ward Water Works.

Section 1. The Select and Common Councils of the City of Philadelphia do ordain, That the Chief Engineer of the Department for Supplying the City with Water be and he is hereby authorized to enter into a contract with Henry R. Worthington, for the construction and erection of two pumping engines for the use of the Twenty-fourth Ward Water Works, at a cost not to exceed the sum of ninety-five thousand dollars, the said sum to be reimbursed out of a loan to be hereafter created: Provided, that the work on the construction of these engines, as far as practicable, shall be done in Philadelphia.

JOSEPH F. MARCER,
President of Common Council.

Attest—ROBERT BETHELL,
Assistant Clerk of Select Council.

WILLIAM S. STOKLEY,
President of Select Council.

Approved this tenth day of July, Anno Domini one thousand eight hundred and sixty-eight (A. D. 1868.)

MORTON McMICHAEL,
Mayor of Philadelphia.

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CITY COUNCILS.

ANOTHER SPECIAL MEETING

Veto of the Water Appropriation

THE MAYOR'S MESSAGE

In accordance with a call from the Mayor, a special meeting of Select and Common Councils was held this afternoon, to reconsider a certain ordinance entitled "An ordinance to make an appropriation to the Department for supplying the city with water, for the purpose of extending the Water Works," which the Mayor does not approve.

The following is the veto message of the Mayor:

OFFICE OF THE MAYOR OF THE CITY OF PHILADELPHIA, Aug. 22, 1871.—*To the Common Council of the City of Philadelphia*—GENTLEMEN: I return, without my approval, the bill entitled "An Ordinance to make an Appropriation to the Department for Supplying the City with Water, for the purpose of extending the Water-Works," and respectfully request you to reconsider its provisions.

It is only after careful reflection, and with very great regret, that I have felt constrained to do so, for I have a warm sympathy with the purpose of this bill, and a hearty desire to cooperate in all proper measures for the extension and improvement of our water supply. A radical defect in the bill is that it appropriates very large amounts—in gross sums—without really and practically itemizing the appropriations or defining the mode of their expenditure, thus disregarding the plain requirements of the act of Assembly of May 13, 1856, and opening the door for expenditures which cannot be watched and checked and controlled with due care by the proper accounting officers of the city.

Thus item 7 appropriates in one gross sum $1,325,000 for the construction of a "*large storage reservoir in the East Fairmount Park.*" Not one word of detail or of restriction accompanies this very large appropriation. The very site is indeterminate; for the East Park extends from Upper Chestnut Hill to Fairmount. The size is as undefined as the location. It may have the capacity of one million or of six hundred millions of gallons. The material is equally uncertain. It may be of cut stone or it may have earthen walls. Its form and its dimensions are as undefined as its site, or its capacity, or the material of which it is to be constructed.

These criticisms have an added force, if it be true, as I have been told it is, that no detailed plans or drawings, nor any estimates, such as are usual and customary before embarking in great enterprises, have ever been submitted to Councils in reference to this reservoir. I have examined the Journals of Councils, seeking such information for my own guidance, but have failed to find any light on these points, and thus am compelled to believe that nothing of record exists upon your Journals to support or explain in detail this large item of expenditure.

Judged then simply by the record, this item is an appropriation of $1,325,000 to the Chief Engineer, to be used without stint or limit in the construction of a storage reservoir on any site in the East Park, within the space of about ten miles, which he may select—and the size, form, capacity and material of the construction, and the period within which to finish it, so far as the record shows as to action of Councils, is left to an equally vague and unlimited discretion.

WATER DEPARTMENT, CITY OF PHILADELPHIA.

SEALED PROPOSALS will be received at the Office of the Department, 918 CHERRY Street, until THURSDAY, March 24th, at one o'clock, P. M., for furnishing the following PIPE and necessary BRANCHES and TURNS, to be delivered at such wharves or central point in the City as may be designated by the Chief Engineer, free of all expense to the City.

The Pipe, Branches and Turns to be cast of good, clean metal, and to be of such patterns, furnished at the expense of the contractor, as shall be approved of by the Chief Engineer; each Pipe to be proved to a pressure of at least one hundred and fifty pounds to the square inch, as follows:

1200 30-in. pipe, weighing from 3850 to 4160 lbs, 12 ft. long
170 20-in. pipe, weighing from 1850 to 2050 lbs, 12 ft. long
200 16-in. pipe, weighing from 1520 to 1550 lbs, 12 ft. long
1000 12-in. pipe, weighing from 840 to 900 lbs, 12 ft. long

No pipe will be received less than the above weights, nor will any allowance be made for any weight exceeding the above. The weight of each pipe must be marked upon it with paint.

Proposals will also be received for PIPE of nine feet lengths, for the same in amount and proportionate weight.

The pipe to be delivered in the next four months, viz: April, May, June and July, in about equal amounts, monthly. Bids to state the price per ton of 2240 lbs. Bids will be received for all or any part of the above pipe.

Also, for furnishing 175,000 Pounds of PIG LEAD, delivered at the Yard, 918 CHERRY Street, in such quantities and at such times as may be ordered by the Chief Engineer.

The Chief Engineer reserves the right to increase or diminish the amount of the above pipe, &c., twenty-five per cent., on giving the contractors thirty days' notice

Payments to be made monthly, reserving 10 per cent. of each payment until the fulfillment of the contract.

The above Proposals will be opened on THURSDAY, March 24th, at 1½ o'clock, at the Committee Room, S. W. corner of FIFTH and CHESTNUT Streets. The bidders are invited to be present.

HENRY M. BIRKINBINE,

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The water in Fairmount reservoir stood five feet four inches deep, instead of twelve feet.

The water in Corinthian avenue reservoir stood fifteen feet deep, instead of twenty-six feet.

The water in Delaware reservoir stood three feet one inch deep, instead of twelve feet.

The water in Schuylkill reservoir stood fourteen feet eight inches deep, instead of sixteen feet.

And this with all the power now in our possession fully employed.

In addition, I quote from a letter just received from the chief engineer of the Schuylkill Canal, dated Reading, August 18, 1871, as follows:

"The water in the river here and above is at this time as low as at any period during the protracted drought of 1869."

Some objection has been made to my estimate for the construction of the larger reservoir, and it has been asserted that the work can be done for a much less sum.

I have only to say that my estimate has not been made upon mere assumption of probable cost, without experience of the manner of doing such work, and the extraordinary precautions necessary to be taken to insure its permanence and safety, but has been based upon careful review of the actual cost of doing exactly similar work at Corinthian avenue, Belmont, and Delaware reservoirs, as well as the cost to other cities who have recently built large reservoirs.

A reservoir embankment cannot be constructed in the manner of a railroad, by careless contractors, of materials indiscriminately taken from a cutting, and placed upon a bank by a temporary railroad, but must be composed of carefully selected material, thoroughly consolidated, puddled, and lined.

It must be remembered that a very slight failure in a reservoir containing 750,000 gallons of water, might result in incalculable loss of property, and probable destruction of human life.

The city of Boston, where public work is carried on in an intelligent and economical manner, has just completed the so-called "Chestnut Hill" reservoir at a cost of $2,500,000, to contain 730,000,000 gallons. Our estimate for a reservoir to contain 750,000,000 gallons is but $1,325,000, and therefore, in comparison with that of Boston, must be considered as exceedingly low.

The estimate has been itemized in the manner usual in this and other departments of the city, and has had the approval of both the Committees on Water and Finance.

On the 30th of November, 1869, nearly twenty-two months since, I asked for the amount necessary to do this and other important work; it has not yet been put at the disposal of the department; the best part of the season has been lost to us, as such work cannot be done to advantage after the first of December.

I feel that I would be open to the charge of criminal negligence, had I not calle your attention to the frightfully dangero position the city is placed in on account the want of proper storage, as often, and forcibly as I knew how.

Having done this on many occasior is for those higher in authority to incur risk of delaying, or leaving this all im tant work undone. Very respectfully,

FRED. GRAEFF
Chief Engineer Water Departme

I hope that I may be excused for making the above remarks, as I have been personally assailed by some of the public prints and by many individuals, and am suffering from the effect of erroneous impressions conveyed by a public document recently issued. I feel that my own justification requires this brief explanation. Very respectfully,

[Signed] FRED. GRAEFF,
Chief Engineer Water Department.

Regretting the circumstance that you should have been made uncomfortable in the matter, I trust that you will acquit me of any intention of causing it, believing our personal relations are too good to leave such an impression on your mind.

I am, very sincerely, yours,
DANIEL M. FOX, Mayor.

The vetoed ordinance was then passed by a vote of 18 yeas to 8 nays.

Resolutions directing the Chief Engineer to furnish an itemized account of the expenditures connected with the construction of the new reservoir, and to advertise for proposals for its erection, were offered and were referred to the Committee on Water Works.

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THE WATER LOAN BILL.

Councils will assemble to-day to consider again the Water Loan bill, which failed to pass over the Mayor's veto at the last meeting. We do not know what preparations have been made to secure the passage of the bill to-day, but we sincerely hope it may be passed in some excellent shape, because the work for which the appropriation is proposed is very badly needed, and should be pushed forward to completion as rapidly as possible. That there is such a pressing necessity is the fault of Councils, for when Mr. Graeff, two years ago, asked for an appropriation large enough to enable him to obtain a water supply that would be sufficient at all seasons, about half the required amount was voted. The sum demanded now, and named in the bill, we believe to be not greater than will be required. It is based upon exact and careful estimates, which were submitted by an officer of unquestionable skill and integrity, to the Councils' Committees, and approved by them. Probably most citizens are satisfied with that fact, and do not desire any further proof of the righteousness of the appropriation. But there has been a cry of fraud raised by the Democracy, and although we know it to be the result of an intention to make political capital out of the Republican party, we cannot afford to treat the charge with the contempt it deserves, while there are very many citizens whose suspicions have been excited by the allegations. It is so easy to refute this charge by the simple expedient of exhibiting the estimates which are in the office of the Chief Engineer, that it will be inexcusable if the party is suffered to lie under suspicion of crime at the moment when it is entering upon an exciting political campaign. The estimates should be produced in Councils and given to the public; if for no other reason, at least because they propose to expend a very large sum of money belonging to the people, who have an absolute right to know in what manner it is used. The Democratic members of Councils also have an undoubted right to see these estimates if they desire to do so. Indeed, we question whether any Councilman, Republican or Democratic, will be justified in voting away such a sum unless he has satisfied himself by examination of the details that it is required for the work which is to be done. Each man owes it to his constituents to assure himself that the appropriation is a fair one before he consents to it. If it can be proved that the bill is based upon estimates which are thoroughly honest, and we are well assured of that fact, there is nothing to lose, but everything to gain, by such an exhibit as will silence Democratic calumny at once and forever. If the appropriation is not honest, it ought to be defeated finally to-day. We need hardly say that the refusal of the Committee to give the estimates will incline the public to believe, without justice, we think, that the whole business is tainted with corruption.

he Mayor's veto alluded to another is connection, which needs an bill provides for the location o voir in the East Park, but it does no the site with exactness and precisi site has been agreed upon by the Chi nees, the Councils Committees and the Park Commissioners, and members of Councils are familiar with the fact; but it will be better to name the locality definitely in the bill, so that there may be no room for mistake. The matter is of too much importance, and the sum of money involved is much too large, to make loose legislation excusable. We hope the bill will be so amended this afternoon that this omission will be corrected, and that we may have a careful statement of the material to be used, the size and shape of the reservoir, and of all the necessary details. But whatever is done should be done at once. There has already been too much delay and trifling with this work. Now let us see if we cannot satisfy everybody, obtain the money, and begin the work immediately.

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I have a high respect for the integrity and the ability of the Chief Engineer of the Water Works, but as a matter of principle I cannot consent to clothe any executive officer with a power so vast and so vague as this. Your record should define, clearly and distinctly, the duty he is to discharge, for the whole legislative power of the city is in your hands. He, as your executive officer, should have no powers except those which you have clearly defined, and should spend no money except for a purpose and in a manner which you have distinctly authorized.

Moreover, I desire, with great respect, to invite you to consider whether a work like this cannot be constructed with far greater economy through the agency of a contractor employed under the restrictions of a well drawn contract, and acting under the supervision and control of the present Chief Engineer, or of some equally competent hydraulic engineer appointed under him.

As a general rule, our vast works of internal improvement are constructed in this manner. Bridges of marvelous length and strength, involving the nicest practical skill and the highest principles of mathematical science, are thus built. Within a few days a steamship company in our midst has placed under one contract every detail of construction and material which attends the building, complete for service, of four noble steamships, costing over two millions of dollars.

The experience of each member of your body will supply numberless illustrations of the facts stated. Why, then, can we not secure for the city of Philadelphia the economy and the efficiency which a proper contract for the doing of this work would procure for her?

If individuals and improvement companies have found the contract system wise and economical and efficient, it must be so in a higher degree with municipal corporations. The uncertain tenure of office by heads of departments; the necessity they are under of employing inefficient or incompetent or slothful hands, to oblige those who have political or personal claims upon them; the tendency which always exists to render works which employ large numbers of men subservient to political purposes, these and many other considerations, which will readily occur to your minds, affect very seriously both the economy and the efficiency of all large works which are directly undertaken by municipal corporations.

It is, therefore, it seems to me, worthy of your grave consideration, whether much of the work contemplated by this ordinance would not be far better done by advertising for proposals, and executing them under a contract with some competent party, acting under the careful supervision of a well-selected engineer.

I might multiply reasons for disapproving of this ordinance, but I respectfully submit these to your consideration and judgment, remarking that I will heartily concur in any well-considered measures for the improvement of our water supply.

Very respectfully,
DANIEL M. FOX,
Mayor of Philadelphia.

For the North American and U. S. Gazette.

Fairmount Water Works in Danger.

The above announcement will, we are sure, be read with consternation by all our citizens. The idea that Fairmount Water Works, the pride of our city, the object first sought for by all strangers, the structures so actually necessary to the health and safety of a large portion of our citizens, should be in the slightest danger, is too serious to believe, and yet we repeat, Fairmount Water Works is in danger—great danger.

Those who read the proceedings of our City Councils will have seen that Common Councils have passed an ordinance authorizing a loan for the extension and improvement of our various water works, as recommended by the present Chief Engineer; a part of the intended plan being the erection of a house sixty feet in front upon the mound dam at Fairmount, the sum of fifteen thousand dollars being asked for and included in the loan for that purpose. Do Councils know that the mound dam is that portion of the works upon which one walks when going to the circular pavilion at the end of the dam? It is, in fact, a portion of the dam itself, being made of earth instead of timber and stone, and in consequence more destructible should water find its way through it, than that part of the dam over which the water flows. When we consider that it is proposed to cut through this bank, and erect a house upon it, we are justified in saying that Fairmount is in danger.

The smallest leak or opening through this earthen mound would probably carry it away, and eventuate in the destruction of the entire dam, and the disastrous results that would follow in a deprivation of the supply of water to any portion of our city, cannot be anticipated. And yet one branch of Councils quietly, and apparently without any suitable examination, pass an ordinance appropriating money for the extension of a work which, as at present, is admitted to be without its equal in this country for utility and beauty, and if to be improved, should only be done after a most thorough examination.

The Schuylkill Navigation Company, seeing the danger impending in carrying out the proposed improvement, sent a remonstrance to Councils against it, which was wholly disregarded. In addition to the danger, we are told that the proposed building will not be in architectural keeping with the present buildings, but rather an excrescence, to mar the symmetry and beauty of this now much admired place.

If councils really desire the present Fairmount works to be enlarged and improved, let them call in a consulting board of competent engineers, to decide upon such plan as will give the most power with the least expense.

We believe that the ordinance authorizing the proposed loan is now before Select Council for its concurrence. We ask them to pause, and weigh well the responsibility before they pass it. SAFETY.

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Philadelphia, Tuesday, March 15, 1859.

LOCAL AFFAIRS.

Improvement of the Grounds and Works at Fairmount.—The large plot of ground on the north side of the Fairmount basin is now being improved in handsome style. The hollows and uneven places have been filled up and graded, and wide, spacious walks have been laid out, which will be gravelled for promenading. About 350 trees, planted last year along the edges of the walks, are now in fine growing condition. These trees consist of elm, ash, linden, horse chesnut, tulip, La Gondas, Norway spruce, Balm of Gilead, evergreen, Kentucky coffee, buckeye birch, willows, Scotch firs, arborvitæs, cypress and other varieties. Some of the balms planted last fall are now nearly ready to bloom. Around the base of the hill a handsome row of trees has been planted. Below this, a carriage-way, 60 feet wide, has been laid out, opening directly in front of Green street, and leading down by the river towards the Lemon Hill property and Fairmount Park. In the centre of the grounds, a beautiful oval grass-plot has been laid out, which will form a prominent feature in the square. On the west of this a circular space has been cleared and levelled, on which it is designed to erect a fountain, the curb of which will be 100 feet in diameter. The water will be supplied directly to the fountain through a six-inch pipe, which is attached to a thirty inch main, and it is calculated that a jet will be thrown in the air at least 75 feet, the pressure being equal to about 130 feet. It is proposed to build this fountain of granite, adornments to be added to it when Councils make an appropriation for that purpose. On the western end of the square, near the entrance to the water works, another fountain is to be erected, 75 feet in diameter, which will be supplied with the waste water from the first fountain. The last will be what is termed a "mushroom" fountain; so called from the fact that the water will flow from it in a sheet to the height of about fifteen feet, and in form similar to a mushroom. A little nook on the northern side of the hill, one side of which is formed of a perpendicular mass of rock, has been planted with trees, and it is designed to place seats along the sides to accommodate visiters. This position, being elevated some distance above the square, affords a full view of the river, Lemon Hill, the pleasure boat houses, the dam, and the little steamboat plying up and down. The grounds now being improved, lie beneath one's feet, affording a delightful prospect. The improvements to the square have been most economically made. The sunken portions have been filled up with earth dug from the city culverts, and the black dirt used to manure the ground was taken from the streets of the city, and the gravel to pave the walks was dug from beneath the soil of the square. The work will not be entirely finished this season; but the fountains will be completed immediately, and put in operation. The planting of the trees has been very successful under the superintendence of Matthew Campbell, an experienced gardener, and they are in a flourishing condition. On the west side of the basin, new walks have been laid out on the side of the hill, and planted with evergreens, which will be continued round to Callowhill street, connecting with steps leading to the basin, so that persons can go up and down directly to and from the Wire Bridge. The western grass plots, near the mansion house, have been manured, the trees trimmed, and the house is being repainted and repaired. The prospect house or building overlooking the dam, has been repainted, and many an ambitious individual, who carved and wrote his name upon its pillars and seats, in the hope of handing it down to posterity, will have his aspirations defeated by this "whitewashing" act. The Watering Committee, in order to strengthen the embankment which holds the basin, intend erecting on the upper side a four feet wall; the flumes will be made of solid masonry. A new mill house will be built of stone on the lower side of the embankment, and supplied with a turbine wheel, to increase the capacity of the works. These improvements will make the embankment much stronger than it now is.

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LEDGER AND TRANSCRIPT.

105

Philadelphia, Monday, Oct. 24, 1859.

LOCAL AFFAIRS.

The Water Works.—The wall on the north side of the mound dam at Fairmount is nearly completed. It is six feet thick, of dressed stone, and laid upon a heavy frame of timbers. It has openings for six gates, two for each turbine wheel to be placed on the south side. These gates, as well as the frames are of cast iron, and will weigh each seven tons. The workmen are now engaged in preparing for the construction of the coffer dam on the south side, so as to lay the foundation for the wheel-house. This improvement when completed, will increase the mound dam from about twenty feet in width to eighty-five, and its length will be one hundred and twenty feet, thus making it much stronger, and adding to its beauty as a promenade. The raising of the Reservoir at Corinthian avenue and Poplar street, nine feet above its former summit, will soon be completed, so far as the outside work is concerned. Three retaining walls of cut stone, averaging nine feet high and six feet thick above the ground, have been constructed—one on Corinthian avenue, and the others on Twenty-second and Poplar streets. This work has been rendered necessary to accommodate the immense pressure that will occur, when the basin is completed and filled with water—its capacity being sufficient to hold twenty-five feet depth of water. It will be connected directly with the pumps to be worked by the turbine wheels, three of which will, it is supposed, keep up a full and constant supply. The lining of the reservoir will not be put in until the Spring, at which time it is expected the new wheels will be completed.

Frederic Graff Jr. Newspaper Clipping Scrapbook
Accession 2004.056

Index by Adam Levine, PWD Historical Consultant
April 2004

This collection of clippings, mounted on 12 x 18 inch thick manila archival paper, was professionally conserved probably in the late 1970s or early 1980s.

Pages are numbered 124 to 160, includes mostly from 1858 to 1871, with a few odd clippings from earlier years.

Where pairs of numbers are used in cross-references (XXX:XXX), the first number is the page, the second number is the article on that page. I have noted where there are duplicate copies in some cases, but in others I simply listed the first appearance of an article and ignored any duplicates on succeeding pages. On most pages the articles are not numbered to correspond with the list, but have been indexed roughly left to right. I tried to include headlines in most cases.

A few letters, engravings and other items are also included in the scrapbook.

Another Graff clipping scrapbook, covering roughly 1854-57, is bound and indexed under Accession 2004.071.

124

1. Appendix No. 167, Journal of the Common Council [of the City of Philadelphia] -- letter dated August 22, 1871, from Mayor Daniel M. Fox to the Common Council, vetoing an ordinance for extending the City's water works, a particular target of the veto being the expenditure for the proposed East Park Reservoir.

125

1. Advertisements for stagecoaches and steamboat lines, with small illustrations. February 20, 1829, no source

2. Adv. for Handel's Messiah, Musical Fund Society, February 20, 1829

3. City Councils "Preamble and Resolution requesting the Legislature to pass an act for the better preservation of the Schuylkill water." Mentions supplement to a previous (1832) act to maintain the quality of the Schuylkill. Resolution passed April 11, 1868

4. "Unwholesome Water." Short article deals with a warning "against allowing drains to pass near wells or springs, or permitting sewerage to escape into water used to for drinking purposes, even at what is considered a safe distance." Also mentions an odor test for impure water. No date, no source.

5. "The Want of Water" Editorial, no source, about "lack of sufficient water for domestic purposes during this summer.... We hope, now that the superintendancy has gone into other hands, that we may have some relief." August 18, 1858, no source. [Second copy on Scrapbook page 128, with date]

6. "The works at Fairmount. How to get a sufficient supply of water." Letter to Public Ledger from A.C. Jones, regarding how to make the pumps at Fairmount more efficient. Ca. 1858 (see 8. below)

7. "Impure Water" Brief article about the water coming out of the Kensington Water Works, which served the Kensington and Richmond areas. "The water which flows from the works is now unfit for use for any purpose, and offensive alike to the taste and smell."

8. "The scarcity of water: where the defect lies." Letter from A.C. Jones to the Public Ledger, dated August 26, 1858, regarding the defects in the pumps at the Fairmount Water Works, including his comments on the 1851 Morris Pump.

9. Report of the Committee on Plans and Improvements of the Fairmount Park Commissioners, listing the boundaries of the park and the sections making up its 1,619 acres. No date, no source.

10. "Give it a fair trial." Letter to the Evening Star, no date, complaining about the cost of the New York Duplex, an engine built in New York, asking that it be given a trial to compare it to similar engines built in Philadelphia.

11. "The People's Gas Works." Letter to the Sunday Transcript complaining of corruption and political maneuvering by the Gas Works trustees and chief engineer.

12. Ordinance of November 12, 1855 regarding water rents, indicating no change in price in 1856.

126

1. "Mismanagement at the Water Works." Letter to Sunday Dispatch, no date, from "Locomotive," complaining about the running of Fairmount and responding to a previous letter by "Mechanist." "Shameful blundering." No source, no date.
See Mechanist letters, 140:1, 144:3

2. "Turbine Wheels. The minority of the Watering Committee." Letter to Public Ledger, no date, about the testing of the Jonval Turbine (ca. 1866) No source, no date.

3. Small article on West Philadelphia commissioners meeting, stating proposed plan for building a reservoir near Monument Road and the necessary water works "near the foot of the inclined plane" for the introduction of water to West Philadelphia. Ca. 1850 No source, no date.

4. "The Water Supply.... Report on a supply of water for the Twenty-First Ward" to City Councils, by H.P.M. Birkinbine, September 1859. Supplying Roxborough and Germantown with sufficient water. No other date or source of article.

5. "What will Councils do?" Editorial, no source or date, about the election of a new Chief Engineer for the Water Department, which says that the re-election of Birkinbine "will be tantamount to a public calamity." "...There is...in the character of Mr. Birkinbine, that charlatanry and love of mysticism peculiar to little minds, behind which he ever shelters himself from remark or criticism. Around the duties of his office he throws an air of mystery, affecting profound skill and science as an engineer, magnifying with grandiloquent and high sounding phraseology, the simplest operations falling to his duty. This weakness is exemplified in the lithographs of his stop-cocks and other nick-nacks, periodically paraded before Councils and the people, all of which are ostentiously [sic] underlined, "Planned and designed by H.P.M. Birkinbine." Though these gimcracks generally are valueless, the lithographing still continues; but the Chief Engineer is not *quite* so obtuse as to lithograph his bursted air chests and other signal and expensive failures, that have resulted from the borrowed and only half-conceived ideas of other and better men..."

6. Explosion at I.P. Morris & Co. (iron works), Thomas Herbert (and others?) killed; loss to company at $10,000. No date, no source.

7. Two brief articles describing officers uniforms, how to differentiate them. No date, no source.

8. Weather month by month for 1859, recorded by "Dr. Conrad, of the Pennsylvania Hospital." No date, no source.

127

Ca. 1858

1. "Short Supply of Water" Editorial which comments on Graff's report that Schuylkill at an all time low due to the needs of the Schuylkill Navigation Company. Fire service threatened. "Under these circumstances it behooves every housekeeper to economize in the use of water..." No date, no source.

2. Receipts and expenditures of Water Department, 1856-1858

3. "West Philadelphia Water Works." Complaining of insufficient water supply in the neighborhood "since the new Chief Engineer of the Water Works [Birkinbine] entered upon his duties.... The trouble, it is said, did not exist under Mr. Birkinbine' predecessor."

4. "The Water Department." Editorial complaining about the 24th Ward Works, "an utter failure." "There is even some fear that the Fairmont Works will go the way of all perishable things, unless some measures be adopted by Councils to obtain the services of scientific men to avoid such a calamity." "We well remember that, when the [West Philadelphia] works were reported as completed, Messrs. Birkinbine & Trotter, the builders, gave a grand feed in the engine house, to members of Councils at that time. Speeches were made by distinguished men; the whole party were "champagned" with Heidsick, and "smoked" with Principes and regalias, and the works were of course at once considered very useful and decidedly ornamental. Time, with its "sober second thought," has brought the stern reality that the works were not put up right, and that the workmanship in many parts was put up so slightly as not be relied upon...."
November 7, 1858, The Sunday Atlas

5. Annual pumpage for Fairmount, Schuylkill, Kensington (Delaware), Twenty-fourth Ward water works. No year given; ca. 1858 [numbers could be checked against those in Annual Reports] No source.

6. Statistics of the Philadelphia Gas Works. No date, no source.

7. "The free use of the Schuylkill water." Problem in summer months keeping supply adequate in the "lower section" when housekeepers use liberal amounts of water on "the fronts of dwellings...running from pipes and hoses for hours at a time..." June 7, 1858. No source.

8. Note from Councils meeting, 1858, regarding the reporting of an ordinance for $221,500 loan for the extension of the Water Works.

9. Two articles on Councils meetings about a "voluminous document" from Birkinbine detailing the present condition of the Water Department. Ca. August 1858. No source.

10. Second copy of letter detailed on Page 125, item 8.

11. Local Affairs. The Water Works. New Chief Engineer working to secure ample supply of water.

12. Amended census of the Eight Ward, ca. 1870, no source.

13. List of city officials: Mayor, councilmen, etc.

128

Ca. 1858

1. Letter to Evening Star, Aug 16, [1858], from "Hammer," responding to letter from "Chisel," about the engine at the Belmont water works. Complains about contracting for this engine with New York firm when "it is claimed for this city that machinery, particularly heavy work, can be built cheaper and better here than in any other place in the country, by reason of the cheapness of material and skill of our workmen." This scrapbook page includes several other notes on the same topic.

2. "Local Affairs: Water! Water!" Editorial from [ ] regarding need for ample supply of water at all seasons. August 18, 1858. See second copy on 157.

3. "The Supply of Water for the City." Editorial, no date, no source. Mentions plans for extension of the works, but concludes: "For the future wants of the city, other sources of supply must be looked for...” Fairmount, Cornish engines, Kensington, Twenty-fourth Ward, Schuylkill, Frankford.

4. " The Water Question." Editorial, no date, no source, Concludes: "We want water to run freely in every house, the moment that faucets are turned. We do not wish to have to wait two hours to get enough water for a bath. We want water, plenty of it, at all times and under all circumstances. It Mr. Birkinbine's plan, extensive as it may appear, will secure us that desideratum, no matter how much it costs, he shall be applauded to the echo, which will applaud again."

5. Brief article about water supply problem, blaming the "d--n fool" who designed the Fairmount Water Works system and "forgot to place the dam below the wheelhouse," which would have allowed the wheels to run even at high tide. No date, no source.

6. "Shall we have pure water?" Editorial regarding the "filthy taste of the water" in the basins of the Delaware (Kensington) Works. "'...If it is true that the operations of the cleaners of catfish immediately in the neighborhood of the Delaware Water Works occasion the contamination of the water, it is in the power of the Councils to pass an ordinance to prohibit such labor with a safe distance of Gunner's run..."

Also mentions that "a nasty culvert debouches at the foot of Coates street upon the Schuylkill, and almost in the forebay of the Fairmount works. This dirty sewer was constructed by the Commissioners of the old district of Spring Garden, at a time when the district was quarreling with the city in relation to the right of using the Schuylkill water. It was built in direct and spiteful determination to injure the water used by the city. It now drains a large portion of the region above Coates street and west of Broad. That such an impure conduit should be allowed to exist after Consolidation, (which was intended to harmonize the existing jealousies of the city and county,) has been very discreditable to Councils. As matters are now, a portion of this filth has, like a poisoned chalice, returned to plague the inventor. The dirty stuff is pumped up now for the delectation of the Spring Gardenites as well as for the people of the old City, Southwark and Moyamensing." Suggests a culvert to carry the flow to the river below the dam.

July 4, 1858, Sunday Dispatch

7. Brief sarcastic note on the stand pipe of the West Philadelphia Water Works, "a failure...one of the scientific triumphs of that eminent engineer, H.P.M. Birkinbine." No date, no source.

8. "The Late Fire." Editorial complains about the insufficiency of water and hydrants in fighting an "extensive fire in the Fourth District." "Can any one inform us how long we are going to be at the mercy of an incompetent Chief Engineer of the Water Department?"
September [17?], 1870, Sunday Mercury [This date might be wrong; seems to be talking about the same New York issue mentioned in other 1858 articles on this page. Was Birkinbine still chief in 1870? NO, but maybe it was Graff being called incompetent.]

9. Ordinance passed regarding reassessment of water rates. Ca. 1858, no source.

10. "Had nothing to say." Birkinbine, in letter to Council specifying repairs needed, did not mention the scarcity of water, which the writer found "somewhat remarkable."
No date, no source.

129

1. Ordinance for Water Department appropriation of $145, 810, passed January 27, 1858. Lists 43 different items covering a wide range of salaries, items, plant renovations, etc., with amount appropriated for each. Two other undated articles report on similar (if not the same) appropriations. No source for any of these.

2. Nominations from Chief Engineer of permit clerks, messenger, inspectors, and purveyors. No date, no source.

3. Note on report to Brooklyn Water Works made by Mr. Graff, "ex-engineer of the Philadelphia Works," and others. December 12, 1858, no source.

4. Article on three comets visible in the sky. September 30, 1858, Inquirer. Another undated, unsourced article includes a list of known comets.

5. Our Water Supply. Editorial regarding need for adequate supply of water for fire fighting purposes. Mentions problems with steam fire engines connecting with fire plugs. January 25, [no year], Evening Star.

6. The Water Supply -- The Condition of the Works. With statistics about pumping from various stations, noting that the supply continues to be limited. August 23, 1867. Ledger and Transcript. A second copy on 150.

7. Distances from New York to some of the most important places in the United States. No date, no source.

8. Description of Croton Aqueduct board, serving New York City. No date, no source.

130

1. List of water rates for Philadelphia. Refers to ordinance of March 15, 1866. No date, no source.

2. Advertisement for bid proposals for supplies for Water Department, "as will be required for 1859," including pipe, iron castings, brass castings, lead, gasket, coal, oil, tallow. Probably January 1859, no source.

3. The Water Duplicate for 1869. Water rents to be collected, by ward. Total of $710,933.40, an increase of more than $30,000 over 1868. January 26, 1869, Ledger and Transcript.

4. The Supply of water and the Water Tax. Letter from "West Philadelphia," complaining about the lack of a regular supply for that section during that summer. September 30, 1858, Public Ledger.

5. The Water Supply. Condition of the Works. Complete version of article on p. 129, number 6. Adds that heavy rains damaged Spring Garden works, and the lining of the Corinthian Reservoir sprang a leak.

6. "Fairmount. The business of the Schuylkill Navigation Company has been resumed, and the boats are passed through the locks as fast as they can arrive. Although there is yet no water passing over the dam, yet we believe the steamer now at work can keep the basins full of water pumped from blow the dam. The Chief engineer seems to have profited by hints conveyed through the press, as we notice he has had a large scow built at Fraley's Fairmount dock, and has placed a dredge at the mud banks, opposite the forebay, so that we hope these unsightly objects will soon be removed." No date, no source.

7. Water Meters. Editorial regarding Graff's suggestion, in annual report, of the tremendous waste of water and the need for devising a way of charging for water that might lessen that waste. Writer argues that health benefits of this use of water might outweigh the benefits of metering: "What will be the effect of enforcing upon the frugal mind the constant idea that every drop of water used costs something? Will there not be a decline in the number of baths used among stingy or poor people? When one understands that every time he washes his face there will be a charge against him, he may be inclined to be mean upon the subject, and may allow his countenance to remain dirty longer than it should. Would there not be a marked decrease in the use of water about many houses, yards, and pavements, which are now, in consequence of the abundance of the useful fluid, kept clean? What is to be the sanitary effect of diminished cleanliness of persons, and of an increase of dirt about our habitations and abodes? After all, the waste water finds its way into the gutters, which it helps to wash, and into the sewers, which are kept

clean by the abundance of the flow. Even with dishonest contractors to clean out streets, and with a neglectful Highway Department, Philadelphia has, since the opening of the Schuylkill Water Works in 1800 [note: actually opened in 1801], suffered less from contagious and epidemic diseases than any other city in the United States. [Note: is this true??] We have since that time gone through experiences of cholera and yellow fever, with less loss of life than in other cities. Are we not indebted for this comparative exemption from sickness and death to the abundance of our water supply? Can we expect to do as well when, by an avaricious plan, we are compelled to buy our water by the gallon? Would it not be better to spend any amount of money to furnish water to an unlimited extent for drinking, cooking, washing and bathing purposes to every citizen, than to risk the consequences of making water dear?" March 7, 1869, Sunday Dispatch.

8. Meeting in Convention. Election for Chief Engineer: Birkinbine, 75 votes, Graff, 17 votes, Samuel Ogden (Ogdin), 10 votes. July 1, 1858. No source.

9. "Our City Letter. Our water supply and the new store reservoirs..." In support of Birkinbine proposal for more storage capacity. During heavy rain, "Spring garden works had their tunnel filled up with sand, the flow of water stopped, the works badly damaged and the Fairmount works could not pump for several days because the water was too high for the wheels and pumps to work...." Result was a shortage of water. "We shall be obliged some time to build these store reservoirs, and the longer we put off doing so the more liable shall we be to such troubles as that which has just happened. We need these reservoirs also to enable the impurities in the hydrant water to subside before the water is sent through the pipes for use. At present every rain-storm gives us cloudy or muddy water. Any expenditure we may now make to provide ourselves with ample water storage will be judicious and praiseworthy." No date, no source. Almost definitely referring to same event as article on 129:6, which date was August 23, 1867.

10. Two copies of advertisements, "Water supply to Germantown," with Chief Engineer Frederic Graff urging "most rigid economy" on those supplied by Germantown Works, as the pool supplying the works "alarmingly low." September 27, 1870

11. "The Water Supply. The wrecking tug *Fuller,* with two seventeen-inch pumps, twenty-three inch stroke, throws 1,393,920 gallons of water per day into the Fairmount basins, at a cost of $500. Four first-class steam fire-engines forced 1,728,000 gallons per day, at a cost of $200, were the city to pay for fuel and food for men." No date, no source.

12. The Water Flows. Residents of West Green street made a "hubbub" when water stopped flowing because of a mistake of a workman, who neglected to turn on the water after repairs were made to a main. The residents denounced Birkinbine, "censuring him for incompetency because he could not anticipate or know that a laborer had been careless."

13. Erie Water Works. "The pure waters of Lake Erie" will soon supply the citizens of Erie with a supply, thanks to a system designed by H.P.M. Birkinbine. No date, reprinted from Scientific American.

No date.

14. Advertisement, resolution from Common Council for a loan for the "extension of the Water Works, for the purchase of League island, and for building an Ice Boat." Ordinance to be considered April 9, 1868.
No date, no source.
1868/04

15. Chestnut Hill Reservoir, Boston. Description of this "gigantic work."
No date, no source.

16. No water in the Twenty-fourth Ward. Editorial. "In the last three weeks the people of the Twenty-fourth ward have been without water in aggregate more than half the time, and for several days together. With incendiarism so rife, with the midsummer upon us, when water for man and beast is doubly indispensable, with every engagement on the part of the city to supply water for which it has enforced payment in advance, such a condition of things is equally dangerous and disgraceful, and demands not only the prompt, but the thorough and effective attention of the proper authorities."

17. Insufficient Supply of Water. How Remedied. Letter to Public Ledger, no date, from B.F.D., concerning water problems in Twenty-fourth Ward.

131

1. Select and Common Councils "meeting in convention" elected heads of city departments; including Birkinbine. A resolution was passed that, in essence, accused Birkinbine of fixing the prices for Water Department parts purchased….
No date, no source

2. The trial of the turbine wheels. Interesting Experiments. Up to this writing six turbine wheels had been tested at Fairmount. Two from Pennsylvania, one each from Texas, New York, Massachusetts an New Hampshire. No date, no source

3. Most Wonderful. Workmen blasting uncovered a spring in the rock at Fairmount. "We understand that the Watering Committee will have the spring so improved by art, That all visitors to the classic headwaters of Philadelphia may have an opportunity to slake their thirst with a first-class "Fairmount cocktail," very suitable in these days of temperance."
No date, no source.

4. Water meters and drinking hydrants. Councils Committee on water examines six plans for drinking hydrants and meter invented in England. No date, no source

5. Important to the city. Schuylkill Navigation Company, Fairmount, City Councils. No date, no source

6. Birkinbine and his Axe. Editorial about employees fired by Birkinbine. 1859?, Ledger?

7. Fairmount. 100-foot diameter fountain completed, using a temporary jet water thrown nearly 60 feet. April [29?], 1859, no source.

8. Letter to Ledger from Job R. Barry, engineer of the Fairmount Water Works, regarding the action of Councils recommending the reappointment of the writer and Mr. Garrett to positions from which Birkinbine had previously fired them. September 12, 1859, Ledger. In brief article following, " A Nice Man.", with no date, no source, the editorialist elaborates: "A Committee of Councils…to investigate the matter declare that Birkinbine's conduct was tyrannical and mean. The solo cause of the discharge of Barry was envy of the superior mechanical talents of the latter, who had invented "an airing apparatus" for working the pumps, superior to anything Birkinbine could do, although he concealed Barry's invention and endeavored to take the credit to himself. The committee sustain these facts in toto. The report proves that this good Christian Birkinbine, who is too pious to allow the fountains to play on Sunday, was actuated in his conduct to Barry by envy, spite, uncharitablenss and unchristianness. Had this report been made three weeks ago, Birkinbine would not have been re-elected." 1859

9. The Water Works. South basin of Kensington works drained so mud could be removed. North basin cleaned last summer of nine inches of mud. Hoped this would keep the water from becoming offensive in warm weather, as it has "for several summers past." Schuylkill Navigation Company withdrew objections to construction of new mill houses on mound dam. Laying of 30 inch main in Broad Street to commence next week. April 14, 1859, no source.

10. Water Pipe. Thirty inch main laid in Broad Street, near Race. Trench dug 12 ½ feet deep to go under culvert. Weight of main from Fairmount Reservoir to Prime Street: 3,000 tons, cost $100,000. First of August set for trail of new turbine wheels for “new mill house”

11. The Improvements at Fairmount. Blasting of rock near the head gates for making a walk to people can ascend to the top of the reservoir. May [26?] 1859, Ledger

12. Graff “considered worthy and an energetic gentleman” in his candidacy for Chief Engineer’s position.

13. Model Turbine Wheels. Competition for two to be placed at New Mill House. Date and source illegible.

14. Letter to the Inquirer, no date, complaining about the “vandalism” at Fairmount basin, due to the blasting of rocks “to improve the place and to add to its natural beauties, and yet the most ornamental portion of the Park is thus ruined by the folly or the cupidity of somebody…” No date.

15. Letter to Ledger, re: letter of previous day by “Bung,” [see also 131:27], titled Schuylkill Water Works, complaining about the changes at Fairmount: new Mill house, blasting rocks, ruining southward view. 1859.

16. Inspector of Fire Plugs in second ward, Mr. C. McCormack, appointed by Birkinbine, “after nearly a year in office.”

17. Advertisement for a meeting in support of J. R. Barry, late engineer at Fairmount. July 6, 1859, no source.

18. The Water department. Reports on new mains, heading North from Kensington to Frankford and south to the lower sections of the city. No date, no source

19. Birkinbine Reproved. Councils ordered Birkinbine to run the fountains at Fairmount on Sundays. “he was not elected to do missionary service on the part of fanatics and narrow-minded people, or to transfer the Water department into a college of the *propaganda fide*. Let him attend to his own business and make himself no longer ridiculous by attempts to subvert his office to sectarian ends.” No date, no source

20. Important injury at Fairmount, Scarcity of water expected. Pump Nos. 3 and 4 burst. Birkinbine’s airing apparatus blamed. Loss of Barry as engineer, and discharge of Garrett for testifying in his favor, left no competent engineer at Fairmount.
No date, no source

21. Will Mr. Birkinbine Explain? Why fountains not permitted to be played on Sunday? “Is the Water Department of the city to become an appendage of the YMCA?…Let us not have any of this Puritan nonsense about the management of the affairs of the city…”

22. “Notice to Quit” – City officials, including Birkinbine, urged to quit by People’s party. No date, no source

23. The Water Works. 30-inch main for lower section of city, several Fairmount wheels rotting, Spring Garden Works, water rents may be paid Jan 1st. Dec. 12, 1859

24. Exhibition of working models of turbines requested. Frankford near receiving full supply of water, thanks to extension of 12-inch main “as far as the bridge at the foot of main street.” Completion by July 1st certain, residents to celebrate, perhaps on the Fourth of July. No date, no source

25. A New Fire Plug. New one invented by Mr. A.C. Jones of Philadelphia, to accommodate needs of new steam fire engines. Description. No date, no source

26. An Old Claim Revived. Of Judge Peters for land in Mantua on west side of Schuylkill flooded when Fairmount Dam built.
No date, no source

27. The Fairmount Water-works. Letter to the Public Ledger from “Bung” complaining about New Mill House, blasting etc. No date, no source. Probably 1859: See Page 131:15

132

1. Brochure for “Wilson’s first premium Electric gas Lighter…patented August 16, 1859. Four pages, 7.5 x 11, back page blank.

2. Silsby, Mynderse & Co.’s Steam Fire Engin. Illustration and brief descriptive article. May 29, 1859, Scientific American.

3. Hoadley’s feed-water heater for boilers. Illustration and brief descriptive article. Scientific American, no date, but perhaps same as 132:1

133

1. Review of the weather, 1869 and 1870. No date, no source

2. Clay sarcophagus of Henry Clay designed by Frederic Graff. No date, no source

3. Advertisement for American Academy of Music fundraising concert, February 17. Frederic Graff on committee of directors. No date, no source

4. The Brooklyn Common Council: the Open Canal on the Water Works. Meeting to consider closed conduit rather than an open canal, from Baiseley’s pond to Jamaica creek. No date, no source

5. A Working Opera. Long review of Huguenots, an opera at Covent Garden, London. 1858, no source, reprinted from Chamber’s Journal.

6. Naval Intelligence. Report on tests of two boilers in he San Jacinto [a steamship?] No date, no source

7. The Quickest Speed in Everything.” [and other records] Human Horse, clipper ships, ocean steamers., river steamers, rowing, sculling, fire engine playing, the prize ring, cricket, locomotives, birds, velocity in flying; billiards, leaping man, leaping horse. “From the Clipper of January 7, 1859”. No other source or date. Continued on 134.

134

1. Council minutes, mention of Twenty-fourth Ward water supply. Petition from Cincinnati man to offering to extinguish all fires in Philadelphia for $200,000 per annum. Communication from Birkinbine calling Common Council report “unfair, unjust, and

absolutely false.” Gives reasons for discharging the men. Discussion in Council, most against Birkinbine, summarized. [See also 131] October 6, 1859, no source.

2. Time trial of steam fire engines at state fair. Three articles. One dated September 20, 1859.

3. Council minutes, Ledger and Transcript, March 11, 1859. Communication from Chief Engineer regarding the claim of Schuylkill Navigation Company regarding the extension of the dam for the New Mill House.

4. Advertisement for ordinance vetoed by Mayor, August 22, 1871, but passed over the Mayor’s objection by both Councils, requesting money in relation to new engines Schuylkill and works, Fairmount dam, reservoirs at Belmont, Delaware works, East Park, large connecting mains.

5. Graff: What he has to say about that large reservoir [East Park]. Graff’s explanation of why the reservoir is necessary and why it can’t b constructed like a railroad embankment, “by careless contractors, of materials indiscriminately taken from a cutting, and placed upon a bank by a temporary railroad, but must be composed of carefully selected material, thoroughly consolidated, puddled, and lined…” Written “nearly 22 months” after November 30, 1869, placing this article ca. September 1871. No source.

6. The Water Appropriation. Editorial supporting the Mayor’s veto but noting that because of political exigencies – that it will support corrupt cronies – it will have to b passed. Ca. 1871, no source.

7. Something for the People at Last. Editorial noting that the Chief Engineer will now turn his attention to “affording the citizens an ample supply of water. Well, the people will be rejoiced to hear that they are to be attended to in this matter, even though it is after the more important public duty of rewarding the office beggars. No date, no source.

135

1. Letter to A. W. Craven, Croton Aqueduct Engineer, from Cambridge University Professor E.N. Horsford, regarding problems with the taste and smell of the water. Reprinted in New York Times, no date. Letter dated August 25, 1859.

2. Value of railroads, canals, and summary of the present elements of Pennsylvania prosperity, as included in a pamphlet, “A review of the relative commercial importance of the cities of New York and Philadelphia, by George W. Baker, cited in unnamed newspaper, undated. Ca. 1859.

3. Birkinbine, Bullock, and Brass. Investigating committee formed to look into accusation from Councilmen Jobber Bullock that Birkinbine was stealing “brass cocks, rings, pins, and so forth” and then reselling them to the Department. Bullock, probably not coincidentally, was interested in becoming Mayor. No date, no source. See 131:1

4. Letter to Public Ledger from B. C. regarding Schuylkill Navigation Company taking issue with extension of works, New Mill House, on mound dam. Date illegible, Ledger.

5. The Delaware Terminus of the Pennsylvania Railroad. Letter to the editor from S. K Hoxsie. Proposal for bridge ver Schuylkill, etc. Ca. 1859. Inquirer, no date. See 146 for second copy.

6. The Engineer of the Water Works. Letter to Inquirer signed "Fairmount," in support of the re-election of Birkinbine.

7. Important to the City. Re: Schuylkill Navigation Company and the construction of the New Mill House. No date, no source.

136

1. Improvements in the water supply, considered in connection with the question of employment of labor. "…The point which strikes most forcibly, after an examination of all the statistics of the Department, is that *the demand for water increases faster than the supply.* The increase of our city goes on at such a prodigious rate, that during the years 1859 and 1860, service pipe was laid (by the request and *at the expense* of the owners) in *thirty-eight miles of new streets*; and this vast amount does not include many miles of supply mains, laid at the expense of the city for permanent benefit…. The direct result of such an enormous extension of service pipe has necessarily been to diminish the effective head of water afforded by the works, under an increased consumption. A corresponding extension of the means of supply, both in machinery and reservoirs, therefore becomes necessary…[since city has become so large, "great objections" to Extending the works with the New Mill House at Fairmount]…. "The whole of the Schuylkill, between Manayunk and the dam, answers in many respects the purposes of a sewer. Without entering too much into disagreeable particulars, we shall merely mention that the river down to the dam is often covered with a scum from the various print works at Manayunk (when in operation); also, between the 1st of January and the 1st of July, of this year, one hundred pieces of carrion, dead horses, dogs, &c, were fished out of the river by men employed for that purpose by the Chief Engineer…." Further discusses need for service for northern, higher parts of the city. Mentions that Manayunk has no water service, exposing it to "great danger from fires." … "The central portions of the city are pretty well off, though even in them the water fails in the upper stories. But in other parts of the city the case is very different. It is supposed that from manufactories alone an increase in [water] rents of near $50,000 could be obtained if the supply was what it should be. The people of Kensington get an insufficient supply of water, and what they get is often very foul, as the wharf is pumped directly into the mains. West Philadelphia is liable to be burned down at any time, as the supply is so irregular that many people will not take the water at all, but rely on wells. In Manayunk an Roxborough 12,000 people are almost without water; in Manayunk the evil is especially great, as the wells are contaminated and the town liable to destruction by fire…."
No date, no source, Ca. 1861

2. Manuscript letter on blue paper, letterhead of “Department for supplying the city with water,” with small engraving of Fairmount, dated January 10, 1860, from G. Neil to Frederic Graff. Reporting to Graff, ex-engineer, on the doings at the Fairmount works under Birkinbine.

3. Small diagram of _____???? No date, no source.

4. New Inventions. [John] Ericsson’s Improved Hot Air Engine. With illustrations and descriptive article. No date, no source., probably from Scientific American.

137

1. Turbine Wheels. Letter to Public Ledger, about the competition for best turbine wheel, text of notice published in Scientific American on June 4, 1859. After six months of trials Jonval turbine, built by E[mile] Geyelin, chosen to be used in the Fairmount works, even though turbine of J. L. Stevenson judged to be the best.

2. Letter to Public Ledger, from “Anti-Lager,” re: blasting of rocks at Fairmont, and asking for more facilities for drinking water from the fountains at Fairmount. May 24, [no year]

3. Advertisement for bids for supplies for the works for 1860. Iron pipe branches &c., iron castings, brass castings, lead: “amount required will be, say about 100,000 pounds…” , gasket “about 5,500 pounds”, coal (more than 7,000 tons), oil (sperm or lard oil, about 500 gallons), tallow (about 4,000 pounds). Bids due February 21, 1860. No date, no source. See 130:20 for advertisement for 1859 supplies.

4. The Schuylkill Water Works. Praise for new Cornish engine. Description of the engine and its operation. “…54,900 gallons of water for every 100 lbs. of coal used.” No date, no source.

5. Advertisement related to auditing executors of the estate of Ann M. Graff, April 19, 1859. Frederic Graff one of the executors. No date, no source.

6. Laying of water mains on Broad and Prime streets completed. [November 3, 1859?]

7. No pavilion this summer at Fairmont, for music, as was adopted last summer [by Councils]. When mound dam completed promenade will be extended and widened over the new mill house. April 21, 1860, [Ledger?]

8. Birkinbine Alarmed. “Birkinbine is scared. He has unchained the fountains in Fairmount Park on Sunday. This is in clear violation of the Chief Engineer’s religious principles. He is fully convinced that the fountains are sinful when they play while the church-bells are ringing.” Editorial goes on to say that he relaxed his prohibition because he thought it might jeopardize his re-election. Also says that he has put forth

three “decoy” candidates to help take votes away from Frederic Graff. Encourages Council members to ignore the decoys and vote for Graff. [June? Jan?] 17, 1860, Mercury.

9. Letter to Public Ledger, signed ‘Honor,” lauding decision to issue a detailed report of the turbine trials. [June 6?], 1860, Ledger.

10. Behind the Municipal Scenes. A Scrabble for Important Offices. Editorial about election of department heads. Very amusing view of this process. Water Department Chief Engineer choices are Graff Jr., Birkinbine, and O. H. P. Parker. “Birkinbine is understood to have the inside track for the caucus nomination, notwithstanding his notorious incompetency, silly bigotry and decided unpopularity. He is using all the means at his command and lavishing promises of office and fat jobs in every direction where he supposes the prospect of patronage will favor his interest. The re-election of such a functionary would be disgraceful….. Mr. G[raff]’s management of the affairs of the department was honest, skillful and laborious. He is a sort of hereditary engineer, and knows more about the Fairmount water-works than any individual who can be mentioned in the same connection. His long and thorough experience, faithful service and first-rate administrative qualities, eminently fit him for taking charge of the works, and completing, in an economical and satisfactory manner, the improvements over which. Birkinbine has blundered and floundered, until nobody knows the limit of the cost or the character of the work that has been performed…..” June 3, 1860, Mercury.

11. The Water-works. Action of the Finance Committee. Discussion of completion of various improvements, including Fairmount, Spring garden, Kensington, Corinthian reservoir; also some reference to Schuylkill Navigation Company. March 14, 1860, Ledger.

12. Birkinbine. Editorial claims that Birkinbine deliberately underestimated costs of improvements and is incompetent. Date illegible [probably June 1860; see 137:13 for same meeting discussed], Dispatch

13. A Blow at Birkinbine. Editorial praises Select Councilmen for denouncing Birkinbine’s “false estimates.” June 10, 1860. Mercury.

14. The New Mill House at Fairmount. Two undated letters to The Dispatch, signed by M., and one article from the Ledger, February 16, 1861, regarding the “extraordinary expenses incurred in laying the foundation.” Mill house, if finished, to cost $54,000 above initial estimate. “The total cost of raising the Corinthian avenue reservoir was $65,300, and the laying of the main to the First Ward $126,172.10.”

138

1. The Chief Engineer of the Water Department. Scathing editorial denouncing Birkinbine and requesting that the “dominant party in Councils” to pause and examine his

record “before deciding to inflict him upon us for another term.” Mercury, May 27, 1860.

2. Extension of the Water Works. Letter to Public Ledger, signed “Make Haste Slowly,” about the money requested y Birkinbine. Ledger, March 5, 1860.

3. Jonval Turbines. Description of the turbines under construction at the I. P. Morris works. No date, no source.

4. The Fairmount Water Works. About the turbine experiments, commenting on the “inadequate” report on the trials. The text of report, undated, perhaps in June 1860, on the same page, along with letter frog O. H. P. Parker, chairman of the testing committee, to Scientific American, March 1860, disputing some of he magazine’s claims and offering a full report at the conclusion of the tests.

5. Small articles on lining of Corinthian Reservoir and construction of New Mill House, no date, ca. 1860. “During the present year nearly 90,000 feet of water pipe have been laid by the Department, nearly all of which has been put down in streets improved within the past eighteen months. The erection of new houses in the outer portions of the city keeps the Water department busy in attending to the applications for water pipes, as the pipe has to be laid before the streets are paved.” No date, no source, ca. 1860

6. “The Water Department. The number of men employed by the department during 1859, worked in the aggregate the following number of days: laborers, 65,000 days; carpenters, 2,000 do.; masons, stone-cutters and bricklayers, 11,000; horses and carts, 5,500; painters, 500; machinists, 8,000. During the year 22 ½ miles of water pipe were laid, exclusive of the main in Broad street, which makes the number of miles laid, since consolidation, 65. From this it will be seen how rapidly the city has grown in the portions that were looked upon as entirely rural at the tome of consolidation.” [Ledger?], April 20, 1860.

7. The Water Job a Failure. Loan for $350,000 defeated; $64,000 approved, as recommended by the Sunday Transcript. March 18, [1860], Transcript. Other brief notes about this loan.

8. Birkinbine provided Argus, [February 14?], 1860, with copy of history of the works and the department’s annual report. 1860, Argus.

9. Report on the new air-ship, *City of New York*, the largest balloon ever made.

10. Interesting Statistics of the Water Department. For 1859, probably, though no date is given.

139

1. For the Digestion of Councilmen. The Water and Highway Departments of the City. Editorial from Mercury urging defeat of Birkinbine, and complaining of the corruption in the Highway Department, which includes interesting information on paving. June 24, 1860. Mercury.

2. A Large Iron Casting. Made at I. P. Morris, Towne & Co, of the Port Richmond Iron Works. Made largest casting ever made in state, a anvil block for a team hammer for the Lackawanna Iron and Coal Company.

3. Table showing mortality by ward in Philadelphia, 1860? No source.

4. Testing of Wrought Iron Girders. Extensive Experiments to Test the Strength of Iron and Steel. No source, no date. Probably from Scientific American.

8. The Home Guard Bill, State Legislature passed May 16, 1861. Inquirer, no date.

9. Colonel Siegel's Retreat. Splendid Military Movements… Battler near Carthage, Missouri. Reprinted From St. Louis Democrat, July 12, [1861?] Includes diagrams of the battles.

10. Boiler Explosion at Richmond. Serious Accident. Two Men Killed. At Penn Works of Messrs. I. P. Morris & Co., Richmond Street, near Cumberland. No source, no date.

140

1. Mismanagement of the Fairmount Water-Works. Communication signed "Mechanist" following up on one of October 21st. Long discussion of perceived problems with water power at times of low flow, the new water wheels (New Mill house?). Sunday Dispatch, no date. See other Mechanist letter, 144:3

2. The Kensington Works Purified with Lime. Used to neutralize the organic matter in the reservoir. No source, date illegible.

3. Two brief articles on the operation of the various water works for March (no year given), and description of recent improvements to Fairmount Water Works, and Fairmount Park. Ledger?, no date.

4. Cornerstone laid for new standpipe at Fairmount. One of the piers for the new railroad bridge over the Schuylkill completed. Ledger, date illegible.

5. Water Supply of Boston. New aqueduct from Dudley Pond to Lake Cochituate opened last Friday. No source, no date.

6. Performance of the Brooklyn [Water Works] Pumping Engine. Ca. 1860, probably Scientific American.

7. Committee on Water [of Councils} visited to New York to examine water works, including Brooklyn. Will recommend that 21st Ward works be constructed on the same plan. No source, September 3, 1861.

8. Improvements at Fairmount. Standpipe in place, in connection with new Turbine wheels. New Mill House progressing rapidly.

9. Newspaper transcript of meeting of aldermen from some unnamed city, probably Brooklyn, mentions Brooklyn and Croton water supplies. No source, no date.

10. Extension of the Water Works. Committee on Water Works of Council, recommends doing away with Kensington (Delaware) Water Works, and serving neighborhood with Schuylkill Works. No source, March 3[?], 1860. Another longer article about his project, citing report from Chief Cassin, ca. 1862.

141

1. Report from Common Council [of Brooklyn?], January 23, 1860, discussion of water supply. Mentions James Kirkwood, Engineer. No source, no date.

2. The Fairmount Water Works. More Improvements. Replacing dilapidated wooden steps with inclined planes. New Mill House. Turbine experiments. Abandonment of Kensington Works recommended. “The main sewer now being constructed by the city along Pennsylvania avenue will be so far completed in a short time as to cut off nearly all of the sewers now emptying into Fairmount dam. When this work is finished, all the drainage now flowing from the prison and other public institutions into the forebay will be deposited below the dam, and thus remove a nuisance which has long been complained of. Ledger, February 18, 1860? 1861?

3. The alteration of the breast wheels at Fairmount to turbines. Cannot be done until completion of new mill house. Ledger, 1861/02/17

4. Water Department and the Unemployed Poor. Letter to the Press, signed “Caution,” complaining that contracts for new Fairmount pumps going “to another State, which contains many disloyal citizens. Press, 1861/07/18

5. Accounts of the Water Department for 1860, with actual expenditures for 28 different items, including salaries and supplies. No source, no date. 1861 ca.

6. Supply of water to American cities. Table 1860 ca. Inquirer, Year not given, Monday Nov. 5.

7. “A Large Pond of Water.” Corinthian Avenue completed to allow 22 feet 9 inches of water. Will be 25 feet deep when completed. No source, 1861/06/05

8. The Water Works of Philadelphia. 1858 pumpage for Fairmount, Schuylkill (Spring Garden), Delaware (Kensington) and Twenty-fourth Ward. No source, no date.

9. Operations of the Water Department. Pumpage for 1859 for Fairmount, Schuylkill (Spring Garden), Delaware (Kensington) and Twenty-fourth Ward. No source, no date.

142

1. Comparison of New York and Philadelphia Water Works, in relation to need for more water in Philadelphia, and loan to complete construction of new mill house. No source, no date.

2. Long letter, no source, no date, signed “M. R. Moore,” explaining why Geyelin’s Jonval turbine was chosen over Stevenson’s turbine to replace the breast wheels at Fairmount. Also discusses turbine experiments. In answer to “allegation” of Mr. Neal that Geyelin’s wheel was judged second best. No source, no date.

3. Accounts of the Water Department for 1861, and recapitulation of expenditures under various water loans. No source, no date.

4. Failed. Editorial lauding the Watering Committee of Councils, for refusing Birkinbine’s request for a $350,000 loan. “There can be little doubt that in the Water Department Birkinbine is the Wrong man in the Wrong Place. Sunday Dispatch, 1860/03/18

5. Philadelphia Water Works. Monthly pumpage for 1858. No source, no date.

6. Work that is needed. An Appeal to the Authorities. Letter to Public Ledger, signed “A Laborer,” asking that laborer’s be paid $1.00 a day out of a special loan to extend the water supply, build reservoirs, pave streets and grade parks. Says more storage a necessity. Ledger, 1861/07/10

7. Increased capacity of the works. At Kensington (Delaware) Works. No source, no date.

8. Blunder at Fairmount Water Works. Article, following up on one published “in your last issue…”Management of the City Water Works,” that claims the entire system a Fairmount is defective. No source, no date.

143

1. “Minute” description of new Jonval turbines at Fairmount. No source, no date.

2. “Strong effort” to be made in Councils to authorize construction of water works at Flat Rock, to serve Manayunk, Twenty-first, Twenty-second wards. Ledger, 1861/07/17

3. Excerpt from statistics in report made “yesterday” by Birkinbine [Annual report for 1860) No source, 1861/02/27.

4. The Water We Drink. Fairmount Park. Letter, signed P., regarding the formation of Fairmount Park and the wharves near Fairmount. Andrew Miller, a councilman who voted against the city acquiring the wharves, “asked leave to place on the Journal a protest against the ordinance, and there it is in print, as funny a paper as ever appeared to public view. He gives a hideous picture of the old wharves, and describes them as “four acres of quagmire;” he also says, “the whole of it has been made by filling in the dirt and offal of the neighborhood. Again, “There is two water courses passing through it into Fairmount dam; one of which—perhaps both—must be kept open for the accommodation of the adjoining property. All the hill side between landing avenue and the railroad, containing from ten to fifteen acres, is nearly filled with houses, the offal from which has no other way to pass but into the Fairmount dam.” After placing this rather unpleasant statement before a half million of lovers of pure water, Mr. Miller consoles us with this reflection: It is not pretended that this land, or these houses, do any injury to the water.” Mayor vetoed the ordinance. “…The water we drink is at stake. These wharves are at the very fountain from which we draw water daily, for the wants of half a million of souls. The front on Landing avenue will now, perhaps, be sold out in lots, and be soon covered with buildings of all kinds, with their cesspools emptying into the basin. The present owners will realize their money [that they would have gotten from the City’s purchase] from sales, and a hundred colonists may cover the ground within a year or two….Mr. Graff, so late as 1857, says, “the impurities thrown out from the east side of the river cannot be sufficiently deflected from the banks to reach the rapid current of the river, but hug the shores, as such matters generally will, and are carried almost directly toward the mouth of the fore-bay of the water-works, there to be pumped up and supplied to our citizens.” … Sunday Dispatch, no date.

5. Advertisement for bids for iron pipe, iron castings, brass castings, lead, gasket, coal, oil, tallow needed by the various water works for 1862. March 21, 1861. No source, no date.

6. Letter to the editor of the True American, incomplete, regarding the insufficient head of the Fairmount Water Works. No source, no date.

7. Letter to The Press, signed “Dots.”, criticizing Birkinbine’s 1859 annual report because it glosses over the poor estimates and resulting cost overruns he made of the projects described. Press, 1860/02/23

144

1. Editorial about another city's Water Works (perhaps Boston? Brooklyn? "Commercial water works") and the nuisance of tearing up the pavement to lay the water pipes. Mentions Philadelphia and the insufficient head in the system. No source, no date.

2. An admonition to the Future. Editorial against Birkinbine. "The Watering Committee of Councils have a lively time of it. The task of managing Birkinbine is like that of driving a sorrel pig up a blind alley…" Sunday Transcript, 1860/09/23

3. Letter from "Mechanist," responding to one from "Locomotive," pointing out problems in the Fairmount Works extension, New Mill House, etc. Sunday Dispatch, no date.
See "Locomotive" letter, 126:1; another letter from Mechanist, 140:1.

4. Small articles on leak in Corinthian Reservoir, completion of stone tower at Fairmount. No source, no date.

5. Water in Kensington. Editorial regarding terrible water in Kensington, with mention of Sewers, Gunner's Run, disease. "…Whether this [new Delaware water works project, completed in 1850] enterprise was in order to give certain parties profitable jobs cannot be known; but the plan from the first was deemed to be objectionable by persons who believed that the refuse and discharges from the large number of vessels at Port Richmond above, and the washings from the shipping and the common sewers below, would combine so as to render the Delaware water taken from any point opposite Kensington impure and foul. [Since the works were completed in 1850],Every summer a complaint comes from the houses supplied by the Delaware works. The basins have been cleansed again and again; the pipes leading out into the Delaware have been changed and extended with but a temporary relief; and the evils of the water system of the vicinity seem to be chronic. At present it is said that a painful and dangerous form of dysentery exists in the region supplied by the works at Gunner's Run, and the water is blamed for the consequences." Includes text of handbill posted by S. Atkinson, M.D., blaming the bad water on the fact that the "dirty stinking pipes" [sewers] had not been cleansed since Consolidation. He recommended opening the fire plugs and cleaning out the pipes, and then the water supply would improve. Sunday Dispatch, 1862/03/09

6. The Turbine Water Wheel Discussion. Select Council to reply to Mr. Neal's minority report regarding awarding of turbine to Geyelin. [Month? 12, 1860]

7. Councils Committee on City Property recommended the purchase of 60-acre strip along Schuylkill, from Wire Bridge to just above Girard Avenue. Still needed approval of full Councils. Price between $160,000 and $180,000. "Upon the plan of the city, there are fifteen streets running through this strip of land, and it is estimated that the cost of grading said streets, whenever they shall be opened, would cost the city more then the entire amount asked for the property. If the ground is turned into a public park, it is probable that a number of fine improvements will be made on the brow of the hill, the

situation of the ground being most admirable for the erection of fine country seats…” Also mentions that Geyelin has been awarded turbine contract; and Landing avenue to be graded and paved, between Smith’s rolling mill to Pennsylvania avenue…
No Source, 1860/05/31

145

1. Brooklyn City News. Excursion to the Engine House at Ridgewood. Speeches made by Mayor, Councilmen, etc. Brooklyn Water Works. No source, no date.

2. Strength of Boiler Iron. Probably Scientific American, no date.

3. Suit of Commercial Bank vs. hydraulic engineer Albert Stein, regarding the water works of an unnamed city. The engineer of the Philadelphia water works (probably Graff) is cited in the article.

4. Letter to unnamed newspaper from correspondent in Paris, “Malakoff,” regarding the reorganization of city government and contemplated public improvements. No source, 1859/12/29

5. United States Census of 1850 compared to 1860, by state. Lists Free and Slave . No source, no date.

6. Frederic Graff designed sarcophagus for remains of Henry Clay. No source, no date.

7. United States Census figures for Philadelphia, by ward, including manufacturing establishments, probably 1860. No source, no date.

8. Dimensions of the principal European churches. In persons, and square yards. No source, no date.

146

1. The other side of the question. Birkinbine’s dismissal of Barry and Garrett. Letter from him dated September 15, 1859, giving his side of this controversy. Also, small article about a petition for extension of Fairmount Park, from Wire Bridge to Girard Avenue, “signed by several hundreds of our heaviest taxpayers.” No source, no date.

2. West Philadelphia Water Works. Repairs planned. No source, 1859/06/04

3. Difficulties at the Water Works. Letter from Job. R. Barry, concurred with by W. Garrett, “Late Engineers at the Fairmount Works,” decrying the unjustness of their dismissal by Birkinbine. Sunday Transcript, 1859/07/31

4. Advertisement, signed “Equity,” refuting Birkinbine’s explanation of the dismissal of Job Barry and Washington Garrett from Fairmount, which had been published in the

North American, September 17, 1859. North American, probably September 20, 1859. The exact advertisement appeared in the Ledger, 1859/09/20.

5. Two other short articles about Birkinbine, Barry, Garrett. No source, no date.

147

1. The Croton Water is Pure. Chemical Examinations by Messrs. Chilton and Torrey. Their Report. Dated August 25, 1859, to Croton Aqueduct Board, [New York City Water Supply]. No source, no date. See also page 152, 153. These are probably all different pieces of the same article.

2. Report of the special committee [of Councils] in the case of Mr. Job R. Barry. Hearing held May 26, 1859. Concluded that "Mr. Barry's statements of the transaction is the truthful one…" No source, no date.

3. New Mill House delayed. No source, no date.

4. Cutting off water. Register of Water instructing Purveyors in each ward to cut off water to those who had not paid their water rents for 1859. No source, 1859/10/22

5. Councils in Motion. Organization and election of officers. Sunday Dispatch, 1859/05/15

6. Letter, signed, "old Citizen," lauding the decision of Frederic Graff to become a candidate for Chief Engineer. Evening Journal, 1859/06/14

7. Letter from Job Barry explaining his view of Birkinbine and his dismissal from Fairmount. No source, no date.

8. Cochituate Water Works aqueduct broke, affecting Boston water supply. No source, no date.

9. Heads of Departments. About Water Basins. Letter, from "An Observer," about the water supply, and critical of various aspects of it. Philadelphia Daily News, no date. Second copy on 148.

148

1. The Department of Water,. Editorial regarding the department's importance, praising Birkinbine, with extract from his 1859 Annual Report. "We might refer in this connection to the enormous coal fraud in the water department during the democratic administration, which was ferreted out and exposed by Mr. Birkinbine, aided by Mr. Neal and other members of Councils…." Based on 1858 annual report, writer concludes: "Under democratic rule it costs 61.20 cents per foot to lay water pipe, and under the People's party 28 cents. We cite these facts in view of the approaching municipal

election…Should the democrats recover sway there [in Councils], they will, of course, oust these officers, an put back their worthless old hacks again, or seek out others equally objectionable….”
No source, no date.

2. List of newly elected Council members.
No source, no date.

3. Letter from Job. R. Barry, defending himself against Birkinbine’s dismissal.
Sunday Dispatch, 1859/05/22

4. The Egotistical Arrogant Assumption of Official Incumbents. Letter, signed “Aqua,” against Birkinbine.
Evening National Argus, no date.

5. The Fairmount Water Works.
Letter, signed “Citizen,” regarding work at Fairmont, blasting of rocks, new mill house not needed, Birkinbine no good, etc.
Press, no date.

149

1. Court hearing related to Angelique Brinkle, asking to be released from charge of breach of peace.
No source, no date.

2. Three advertisements for bid proposals for cast iron water mains, 1849, 1868 and 1869.
No source, no date.

3. Report on practicality of using salt water to flush streets in New York City. October 13, 1869. Article continued on 153 and 155
No source, no date.
1869 ca.

4. Chemistry of a River. Concern over condition of Schuylkill river, in an editorial from probably a New York newspaper, as it refers to “our own Croton.” Shown that acid from coal mines was a major cause of the disappearance of fish in the river above Reading, but that limestone neutralized the acid before it gets to Philadelphia. “So the Schuylkill, without its limestone tributaries to neutralize the acid from the coal mines, would be unable to furnish pure water to the city of Philadelphia, or to feed the boilers of the twelve hundred steam engines which have made her so great a manufacturing centre. Considering that the Schuylkill is a mountain stream, with a precipitous channel, purified by heavy freshets, and that is chemical condition is absolutely perfect, it is difficult to understand how our neighbors of Philadelphia can be alarmed for the purity of their

water. On that score nature has done everything for them but to raise it to their lips; and having made it pure to their hands, it will be their fault alone if it does not continue so.”
Reprinted from New York Tribune.
No source, no date.

5. Letter from W. Garrett, replying to attack by Birkinbine on his reputation as an engineer. Also mentions Job Barry.
No source, no date.
Probably 1859

6. The Worthington Engine. The contract for the new pumping engines at the water works. Investigation by the Common Council committee. No bids received. A one-sided decision. Questions into contract between Graff and Worthington, of New York,
No source, no date.

150

1. Steam fire engine trail in new York City. Philadelphia engine part of trial.

2. Biographical sketch of Madame Gazzaniga, “the prima donna of the Philadelphia Italian Opera Company,” and a list of the 39 operas in which she had appeared.
Evening Bulletin
1858/03/19

3. Two advertisements for concerts at American Academy of Music, February 17, no year given. Graff listed as one of Committee of Directors. See also 133:3.

4. The Wholesale Poison Question. Editorial noting that manufacturers have petitioned against a bill in the State Legislature which would forbid “the use of the [Schuylkill] river for sewage purposes from Norristown dam to Fairmount dam.” Editorial adamantly against the pollution of stream by manufacturers. [In two pieces on page]
Sunday Transcript
1868/03/29

5. Small note on Boston water consumption
No source.
1869 ca.

6. Chart showing what time it is in various cities when it is 12 O’clock in New York. Before standard time zones established. From Appleton’s Railway and Steam Navigation Guide. For example, the time in Philadelphia would be 11:55.
No source, no date.

7. Society of Practical Engineering, New York City, summary of meeting at Cooper Institute during which Lawrence Holms of Paterson, read “an exhaustive paper on The Filtration of Water for Industrial, Commercial, and Domestic Purposes.”

No source, no date.

8. Advertisement from Bushong & Brothers, of Reading, Pa., reprinting a letter sent to Frederic Graff, in favor of a lower bidder for iron pipe, Messrs. Mellert & Kinsey, of Reading. “The city loses some sixty-thousand dollars by this rascality….We feel in duty bound to spare no pains or expense to have this fraud on the tax-payers investigated and exposed.” Graff returned the letter without comment.
No source, no date.
Letter dated April 22, 1870

9. Note from London board of Sewers regarding total traffic in crowded places in the city.
No source, no date.

10. Currency exchange rates provided by James Ross Snowden, Director of the Mint, Philadelphia, November 12, 1857.
No source, no date.

151

1. The Water Department and its Engineer. Long editorial about Birkinbine, Barry and Garrett, with a scathing critique of Birkinbine, especially his design for the West Philadelphia Water Works (Twenty-fourth Ward Works).
U.S. Mechanic’s Own (Philadelphia)
1859/09/24

2. The Job Finished. Editorial. Select Council passed, by vote of 18-1, over the Mayor’s veto, the Water Loan bill. “No debate was permitted….The scheme was hustled through the Camber pretty much as a burglar hustles his plunder out the window.”
Inquirer
September 6, [year not included]

3. Fairmount. The present prospect. No increase in the supply of water. the effects of the late rains not noticeable. Philadelphia superceded by new York. Chief Engineer Graff sends to New York for assistance. “…The Schuylkill…reminded us more of a country mill pond than a navigable river.” Nice description of Fairmount Water Works, the river at low stage, with fishermen, people strolling. Works not working—not enough water—‘John Fuller’, a wrecking and steam fire tug, from a private New York firm, employed in pumping water from below the dam into the reservoir, rather than the Philadelphia steam fire engines…. End of article to be found on 153.
No source, no date.

4. The Worthington Pump. Letter to Editor, incomplete, dated June 26, 1868. Why is an inferior and more expensive New York pump being used? [from Mr. B. H. Bartol, “who for years managed one of our large machine shops: see reference in 151:7] [End of letter on 155]. Bulletin, June 26, 1868

5. Water Meter. Small article in favor of metering, talks about waste of water.
No source, no date.

6. Philadelphia Water Supply. Letter discussing the scope of the Schuylkill watershed, the use of store reservoirs to equalize flow of the river, Schuylkill Navigation Company. Corrects mistakes in previous letter.
No source, no date.

7. The New York Pump at Belmont. Another Chip By Chisel. Letter signed “Chisel,” complaining about use of New York-made Worthington pumps at Belmont, pipe from Jersey City…. “Mechanics throughout the country know at a glance Philadelphia made machinery by its fine finish and absence of useless decoration as compared with the rainbow-hued ornaments employed on Yankee tools. I saw lying at the [water] works a lot of Patent Pipe from Jersey City, and I also learned that the Chief Engineer [Frederic Graff Jr.] proposes erecting more patent New York pumps….Has anyone seen any advertisements for bidders?…”
Evening Star
No date
1868/06

8. Fairmount Water Works in Danger. Letter signed “Safety,” regarding the enlargement of the works, and the danger of building the new Mill House on the mound dam.
North American and U.S. Gazette
No date.
1859?

152

1. The Steam Engine Controversy. Letter, signed “Economy,” against the [Worthington] Duplex pump.
Evening Star
No date
1868/06

2. An Insult to Philadelphia. Editorial, regarding Worthington pumps for Belmont.
No source, no date.
1868

3. Reputation of Philadelphia Mechanics. Editorial against the Worthington pumps.
Telegraph
1868/06/23

4. Several other editorials against the Worthington pump.
No source, no date.

5. “Cornish Bull” vs. “Patent Duplex.” Letter, signed Hydraulic, comparing these two engines, Cornish made in Philadelphia and Duplex made by Worthington in New York. Concludes that it would be cheaper to pay $100,000 for two Cornish engines than to accept as a gift two Duplex engines. [See 151:7 for date information]
Evening Star
1868/06/28

6. The Pump Controversy. Editorial suggesting that no restrictions should be made in bids by requiring that the material be made in Philadelphia, or else other cities might respond in kind. Suggests that Graff may need to be trusted in this scientific matter, and that Merrick & Co., manufacturer of the Philadelphia-made pump, might or might not be the best. Encourages a scientific commission to report on the questions, as cheaper “in comparison to what may be lost if an inferior pump, not able to do the work required, is adopted.:
No source, no date.
1868

7. Letter from John Torrey, on vegetable matter in Croton reservoir, New York City Water Supply. See also letter from James Chilton, 153, and a second fragment on 153.. Also 147:1
No source
1859/08

8. Fragment of article on new York City Water Supply.
No source, no date.

9. Part of Select Council minutes, June 1868, with letter from various Philadelphia manufacturers discouraging the passage of an ordinance requiring bidders to manufacture items in Philadelphia.
No source
1868/06

153

1. Fragment of Council minutes, providing text of discussion between Bowker, Henderson, and Bardsley, regarding contract for Worthington pump.
No source, no date.
1868 ca.

2. Copy of manuscript letter, signed B. H. Bartol, to Mayor Morton H. McMichael, asking him to veto the purchase of the Worthington pump.
1868/07/10

3. Excerpt from Common Council minutes, with discussion of Worthington pump. Also a mention: “Mr. J.C. Martin offered a resolution, instructing the Committee on City Property to inquire into the expediency of importing 40,000 English sparrows.”

No source, no date.
1868 ca.

154

1. Advertisement for bid proposals for iron pipe, signed by Frederic Graff.
No source, no date.

2. Who can Answer? Letter, signed ‘Inquirer,” regarding questions about differences in cost between Worthington engines purchased for Roxborough and Belmont works. Also question about high cost of laying the pipe across the Schuylkill?
Evening Star
No date

3. Worthington Engine investigation in Common Council. Meeting on March 22, 1871. Committee consists of Mitchell, Allen, Bardsley, Bowker and Kendrick. Graff made statement. The committee will meet again “Monday next.”
Inquirer
1871/03/23?

4. Fragment of article on Paris, giving statistics of streets, gas, houses, quays, transportation, accidents, and consumption of beer, brandy and liqueurs.
No source, no date.

5. End of the Pump Controversy. Editorial. Worthington pump chosen. Philadelphia mechanics should “live and let live…”
No source, no date.

6. The Worthington Contract. Letter signed “Fair Play,” denouncing the decision of the “Special Committee appointed by Common Council” regarding the Worthington pumps.
Inquirer
No date
1871 ca.

7. Advertisement, signed “Mechanic,” “to Republican Voters of the Second Senatorial District,” against Common Council member A. Wilson Henszey, who voted in favor for the Worthington firm in favor of Merrick and Sons.”
No source, no date.

8. Editorial: “There are some jokes that are no jokes at all. In that little story that Aesop tells about the boys and the frogs the matter of throwing stones was certainly no joke to the frogs, however it may have appeared to the boys, and the tax-payers of Philadelphia will scarcely appreciate the facetiousness of Mr. Shermer’s remark yesterday at the meeting of the Water Committee [of Councils], that it would be well not to make the commission test the Worthington pumps too large, as all the members would have to be paid. This jest of Mr. Shermer was responded to by Mr. Davis, who in the most jocular

mood imaginable suggested that $25,000 be appropriated, whereupon, according to the reporters, there was laughter. All this may have been very funny to the gentlemen named and their fellows on the committee, but it does not appear to us in that light, for too much suspicion has already been excited with regard to the management of the Water Department for those who have to foot the bills to look with complacency upon the process of playing ducks and drakes with their money, or to consider the suggestion that certain men are to be bought up as a jest that is entirely too likely to be a stern reality to be at all amusing."
No source, no date.

9. Hot Water vs. Cold. Graff being charged by William B. Henderson in awarding pump contract without bids, in violation of section 27 of the act of consolidation, and special committee has been appointed.
Source illegible
1871/04

10. The Water Supply. Editorial, excoriating Democrats on Select Council, who, except for Col. Page, voted against an appropriation for work extending the water supply and he Fairmount Park. They did this because they wanted to keep the patronage jobs the appropriation would create out of the hands of the Republicans until after the Fall election.
No source, no date.

11. Letter from Graff, to Select Council, dated September 5, 1871,
regarding a water loan passed by Councils June 28, 1871, but vetoed by the Mayor. Letter refers members to Select Council Journal, 1871, p. 80 and page 31 of the appendix. East Park Reservoir discussed.
No source, no date.
1871 ca.

12. Common Sense of the Worthington Pump Controversy. Editorial insists the rightness of the decision to award contract to New York firm, instead of insisting it go to a Philadelphia firm. "This all comes from the same causes that bring people to Philadelphia to buy all the large number of superior articles we manufacture, in preference to those they can get at home."
Ledger and Daily Transcript
1868/06/18

13. Letter Signed "Economy," about the Worthington Pump controversy, against paying more for a New York pump. Dated June 5, 1868
Inquirer
1868/06

155

1. Note reprinted from New York Sun, giving tax valuations both before and after Central Park was built, showing surplus of more than $1 million, and "which demonstrates the fact that a generous, well-appointed Park acts not only as lungs to a city, but will pay for itself."
No source, no date.
1867 ca.

2. Belmont Pumping Engine. What a Machinist Has to Say. Letter, signed "Hammer," asking for a test to be made of the Worthington Duplex pumps. "The selection of new York pumping engines for the Philadelphia Water Works has been thoroughly advertised throughout the country, and has already resulted in great detriment to the reputation of Philadelphia…." Second copy on 156
Evening Star
1870/11/21

3. Inspector of Coal Oil in trouble. Mr. Robert M. Evans. Republican candidates for State Senate, including "Connell and Henzsey," and others, have signed petition for his removal. Reference to Alderman Carpenter. Not clear what city this I in reference to, though Henszey is mentioned as a Philadelphia councilman running for senate on 154:7.

4. Annual meeting of Schuylkill Navigation Company. Mentions tonnage carried, compared to 1868. Mentions problem with Fairmount Water Works using more water than it is allowed.
No source.
Ca. 1869

5. Advertisement, in which "citizens are…earnestly requested to abstain from the waste of water in any form whatever," due to "long continued drought and consequent unprecedented low stage of water in the Schuylkill.." Signed by Frederic Graff. Dated August 12, 1869
No source
1869/08

6. Water Meters. Editorial in support of them.
Evening Star
No date, except Friday, January 6.
1871/01/06.

7. The Roxborough Water-Works. Common Council Committee investigating Worthington pumps to meet again Monday.
No source, no date.

8. The Croton Aqueduct department, New York City Water Supply. First part of an article. No source. Ca. 1858

9. Fragment of editorial about “whiskey ring.”
No source, no date.

10. Municipal Loans and Works. Editorial about a Common Council resolution to publish an ordinance creating a loan of $1,640,000 “for the further extension of the reservoirs, Water Works, building of new reservoirs, introduction of turbine wheels, laying of new water mains, building of culverts, construction of an additional ice boat, etc. the work to be provided for by this loan is indispensable to the progress of the city….” Mention that, at Fairmount, old wheel houses have been removed and operations begun to introduce new turbine wheels in place of the old breast wheels. New water works required for West Philadelphia, “in consequence of the old establishment having been blocked up by the formation of a mud bank or island in the river directly in front of it. The reservoir for the same district is also to be finished…. From the proceeds of the new loan must also be paid…the $800,000 recently appropriated to defray the cost of culverting Cohocksink creek, Mill creek and other streams. Mill creek is quite as formidable an obstacle in West Philadelphia as Cohocksink creek is in Kensington and Penn Districts. The work ought to have been one [already], and our only surprise is that the Board of health have not presented both those filthy streams as public nuisances, since they undoubtedly area, and of the worst kind, too….” [See 130: for advertisement of this resolution, adopted April 9, 1868, by Common Council.]
No source, no date.
1868/04

11. The Latest in Photography. Photoglyphic Engraving. Invented by Fox Talbot.
No source, no date.

12. Rules of Fairmount Park[?], fragment of Section 19 empowering a Park Police force.
No source, no date.

13. New Iron and New York. Railroad tracks laid with new T iron; incomplete article.
No source, no date.

14. Advertisement for bid proposals for cast-iron service pipe, iron and brass castings, lead and gasket. Dated January 30, 1868
No source, no date.
1868 ca.

156

1. Schuylkill Navigation Company Report for 1869 at annual meeting of Stockholders.
No source, no date.

2. The Waste of Water. Good editorial supporting the more careful use of water, especially during the summer months.

3. The Water Main Contract. Letter, signed S. Fulton & Co., refuting Bushong & Brothers advertisement accusing the Water Department of not awarding pipe contract to lowest bidder. [See 150:8 for original advertisement]

4. Advertisement? “We want to be just with the Schuylkill Navigation Company in the matter of its claims against the city [regarding the city using too much of the water during a dry summer]. If it is true that the company never declared but a single dividend, and that was one summer when the directors turned out and mowed the tow-path and divided the hay, why, then, we approve of giving this claim consideration. It would be rather much to tell the directors to go to grass again, wouldn’t it? Hey?”

5. The Supply of Water Downtown. Mains in southern part of city being laid. Thirty-inch main in Broad Street, Washington Avenue, Fifth, Eighth, Tenth, Eleventh Streets.
Ledger and Transcript
1859/11/07

6. Two editorials(?) concerning the Croton Aqueduct, New York City Water Supply.
No source, no date.

7. Advertisement for bid proposals for new 40 inch main for Boston Water Works. Bids due July 31, 1858. Signed by John H. Wilkins, President of the Water Board, and James Slade, Chief Engineer.
No source, no date.
1858/07

8. Trial of Steam Fire engines at Boston. Philadelphia engine assumed to be the best. Report dated August 11, 1858.
No source, no date.
1858/08

9. Our Supply of Water. Schuylkill extremely low, no water running over dam at Fairmount. “The exigencies of the Schuylkill Navigation (who calm the prior right to the water by the terms of their charter) require the stoppage of all the wheels at Fairmount for a portion of every day….We trust all will see the necessity of avoiding the waste of the fluid at this time. It is to the interest of every one to prevent it.”
No source, no date.

10. Letter from “Chisel,” incomplete, regarding the Worthington engines.
No source, no date.
1868 ca.

11. “A remonstrance against lighting with gas,” presented to Councils 25 years ago, in March 1833. The article states, the petition is reprinted “on account of the peculiar objections it contains.” Suggests that the waters of the Schuylkill and Delaware will suffer and all the shad and other fish will disappear for some unclear reason. Part of an article on the Courts, which is incomplete. No source. 1858 ca.

12. Brief article warning against water waste because of low Schuylkill.
No source, no date.

13. Brief article giving a list of other years in Philadelphia history which were hot and dry. Refers to article in Daily Evening Telegraph of the 1st inst. (July 1, 1870) for much valuable information.
No source
1870/07/07

14. Water main being laid across Susquehanna "at the upper part of our city" [Harrisburg??]
No source, no date.

157

1. Letter to Press, signed "Housekeeper," regarding waste of water during this drought time and asking why order is not issued to ban washing of sidewalks and sprinkling of streets.
Press
1869/08/10

2. Small note asking residents not to waste water, calling attention to the "card" [advertisement?] of the Chief Engineer in another column.
No source, no date.
1869 ca.

3. Engraving titled 'Menagerie" [Philadelphia Zoo?]
No source, no date.

4. Croton Reservoir New York Water Supply during drought times.
No source, no date.

5. Improvement of the Schuylkill Canal. Attempt, using cofferdam, to deepen the entrance to the locks. Could involve blasting rocks.
No source, no date.

6. Brief summary of receipts of Water Department 1857 and 1858, and assessment of 70,000 houses in preparation for issuing the duplicate for 1859.
1858/12/17

7. [Envelope, with handwritten in ink:]
Property of ~~the Water~~ Frederic Graff
Department of Philad^{a}.
June 24/[18]68
[Handwritten in pencil at top:] 1867-71.

[Perhaps this held some of the clippings that are included in this album?]

8. Brief note wondering why the Chief of the Highway Departments, Mahlon Dickinson, is always in trouble with the Councils, “while they close their optics to the grossest mismanagement on the part of the Chief Engineer of the Water Department [Graff].”
No source, no date.

9. Graff Letter, calling attention to advertisement in paper of today regarding the “alarming low stage of water in the pool supplying Germantown.” See for 130:10 for two copies of advertisement.
Daily City Item
1870/09/27

10. The Old Wooden Water Pipes. Last week the last of the old pine wood water pipes were removed from Bread street, by the Water Department, to make room for iron pipe. The last of these logs were laid in 1828, and extended on each side of Broad street, from Filbert to Vine, and out Vine to Fifteenth street. The city had altogether 241,604 feet of Pine logs laid at various times, the first having been connected with the old water works at Penn Square…..
No Source
1858/12/14

11. Scarcity of Water. About low level of Schuylkill.
No source, no date.

12. Advertisement from Graff, urging against water waste.
No source.
1869/08/12

13. Water supplies of Philadelphia and London compared for 1867.
No source, no date.

14. The City Water Works. Pumpage information. Kensington now supplied from Fairmount. West Philadelphia works “kept fully employed to answer the demands of that large and rapidly growing population.”
No source, no date.

15. Engraving: United States emblem: Eagle and E Pluribus Unum.
No source, no date.

16. Water for Philadelphia. A plan to supply the city on both sides of the Schuylkill with an increased supply of purer water. Letter, signed “H.” “The water in the present dam, between Manayunk and Fairmount, is injured by the great quantities of dye waters and other filth, let into the river below the upper dam, which is situated at Flat Rock, immediately above Manayunk.” Suggests taking purer from the dam above Flat Rock.
Evening Bulletin, 1858/10/25

17. Advertisement: In accordance with a resolution adopted by Common Councils" January 20, 1870, "the annexed bill, entitled "An ordinance creating a loan for the further extension of the Water Works," is hereby published for public information…"
No source
1870/01/21

158

1. Concerns about impediments to navigation in the Schuylkill in 1768. Could be part of Westcott's history?? Good information about plans and ideas that ultimately were adopted years later by the Schuylkill Navigation Company.
No source, no date.

2. Belmont Water Works. Some Facts About the New Pumping Engine. Review of the controversy with the Worthington pumps. "Mechanics of Philadelphia, your reputation is assailed by those who should do most to protect you. You who handle the hammer and chisel, run lathes and know what a job is worth, go to the Belmont Water Works and see for yourselves…. Insist upon an honest public trial by fair men…
Evening Star, no date, only Tuesday August 9, which would make the year 1870
1870/08/09

3. Water Down Town. Broad Street main to be filled this week…
No source, no date.

4. "The large fountain on the north side of the Fairmount basin will be played on the Fourth of July. This is the largest basin in the city, and the jet of water will be thrown at a greater height than any heretofore constructed in Philadelphia.
No source, no date.

5. Honored in the Breach. Personal cleanliness, compared to cleanliness in the city. Washing pavements can be done too often. Consumption a cause of this constant saturation of the bricks and increasing the humidity of the atmosphere. "One may as well live in a bog as in some parts of Philadelphia where this abuse exists."
The Day
1870/10/28

6. Argument against Graff's reorganization of the Water Department.

7. Number of dwelling houses in Philadelphia, 1860 vs. 1870. Table by ward, including number of residents per house.
No source, date only Wednesday January 18, making the year 1871
1871/01/18

8. The Water Question. Editorial, worrying about water supply being deficient the coming summer because of inadequate machinery. "We don't want a recurrence of the

scenes of last summer – housewives walking squares [blocks] for water for their tea, and the Fire Department totally paralyzed and permitting buildings to be destroyed for fear of wasting that which it was not improbable might be required for the support of life."
No Source
1870/06/29

9. Water. Fountains erected throughout the city [Philadelphia] during the past year [1869]. Gives addresses and donor of each fountain. Philadelphia Fountain Society. In 1869, 11 fountains erected, making a total of 32.

10. Corruption. Councilmanic investigation. A $55,000 contract. The one man power. Injustice to Philadelphia mechanics. Committee investigating whether Graff awarded Worthington a contract for pumps without asking for bids. William M. Henderson instrumental in investigation.
Post
1871/04/05

11. New spring found near the steamboat landing at Fairmount.
No source, no date.

12. Commencing of operations at the Belmont Water Works. The water pumped into the new reservoir, near George's Hill. Article describing the reservoir and the pumps and engines, Worthington Duplex design.

13. Philadelphia Mechanics Awake. Editorial about breaking up of the "water ring in Councils." The continuing controversy over the purchase of Worthington pumps from New York.
Sunday Times
1870/10/16

159

1. Letter, signed "Taxpayer," regarding Graff's secrecy over his estimates of the cost of the new East Park reservoir.
Inquirer
No date.

2. Schuylkill water analyzed in 1870; as pure as it was when analyzed in 1842.
No source
1870 ca.

3. Water Supply. An important suggestion. Editorial supporting construction of East Park Reservoir.
Philadelphia Post
1871/01/18

4. Delaware Water Works. Basin sat Kensington (Delaware) Works being cleansed of mud, but problem with unfit water still not the mud, but the source of the water at the intakes.
No source, no date.

5. Table of Water Rates in Boston.
No source, no date.

6. Advertisement for bid proposals for cast iron mains. Due April 14, 1868.
No source
1868/04/07

7. An Attempt to Galvanize. Robert Evans, "Fighting Bob," Councilman, had words of praise for Birkinbine in a Council debate over a $53,400 Water appropriation. Editorial scoffed at the idea of "resuscitating Birkinbine in the chief engineership…. If it is true, as the enemies of Mr. Graff now say, that *he* is a failure, what a stupendous, unapproachable failure Birkinbine must be!"
No source, no date.

8. New Cornish Engine. At Schuylkill Works. Description of this engine. Perhaps from Scientific American?
No source, no date.

9. Letter from Birkinbine to Graff, demanding an investigation into Graff's contention that some of Birkinbine's work was faulty. Letter dated March 3, 1871.
Evening Telegraph.
1871/03

10. Patent Pump. Letter to Councils, from maker of patent compound propeller pump, dated May 9, 1871.
No source
1871/05/09

11. At Last. Common Council to investigate manner in which contract awarded to Worthington for Roxborough.
No source, no date.

12. the Power of Locomotives. New York and Erie railroad experiments.
No source
1858/04/14

13. Trial of Philadelphia Steam Fire engines. Southwark, Weccacoe, Good Intent companies.

160

1. Part of letter from Birkinbine responding to letter of “H.” regarding aqueduct water system for Philadelphia
No source, no date.

2. Trial of Steam Fire Engine Good Will.
No source, no date.

3. Statement of Graff regarding Mayor Daniel M. Fox’s reasons for vetoing water appropriation. Reservoirs, East park, etc.
The Press
1871/09/01

4. Advertisement authorizing contract for two pumping engines for Twenty-fourth Ward Works. Ordinance for not more than $95,000, approved July 10, 1868
No source
1868/07

5. Mayor Fox, his reasons for vetoing water appropriation, East park etc.
Letter dated August 22, 1871.
No source.
Other items on this page also concerning this issue.
1871/08

6. Advertisement for bid proposals for pipe, and necessary branches and turns.
Due Thursday March 24, no year given.
Signed by Birkinbine.
No source, no date.

7. Improvements of the grounds and works at Fairmount. Good description of the work being undertaken. Fountain, lawn, gardens. “The improvements to the square have been most economically made. The sunken portions have been filled up with earth dug from the city culverts, and the black dirt used to manure the ground was taken from the streets of the city, and the gravel to pave the walks was dug from beneath the soil of the square….”
Ledger?
1859/03/15

8. Improvements of mound dam, widening I from 20 to 85 feet, wall built to accommodate new turbines. New Mill House. Corinthian Reservoir being raised by nine feet.
Ledger and Transcript
159/10/24